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Petroleum Technology 58

DEPARTMENT OF THE INTERIOR
JOHN BARTON PAYNE, SECRETARY
BUREAU OF MINES
H. FOSTER BAIN, ACTING DIRECTOR

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# BIBLIOGRAPHY OF PETROLEUM AND ALLIED SUBSTANCES IN 1918

BY

E. H. BURROUGHS

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# BIBLIOGRAPHY OF PETROLEUM AND ALLIED SUBSTANCES, 1918.

By E. H. Burroughs.

## INTRODUCTION.

This bulletin is the fourth in the series of petroleum bibliographies being published by the Bureau of Mines, the three preceding, Bulletins 149, 165, and 180, being compilations for the years 1915, 1916, and 1917, respectively. In this bulletin the same general plan has been followed in arranging the references, but a few changes and additions have been made in the classification, the more important changes being in the classes ''Geology and Origin'' and ''Refining and Refineries.'' During the year German periodicals were not available, and, as in the bibliography for 1917, references to articles in foreign journals that were not available have been taken from other sources and credit given to those sources.

### ACKNOWLEDGMENT.

Acknowledgment is made to Messrs. C. H. Beal, C. P. Bowie, M. J. Gavin, and E. W. Wagy, of the petroleum division of the bureau, for assistance in arranging the references under the classification; to Miss Isabel Evans, of the United States Geological Survey, for several references from a petroleum bibliography prepared by her; and to Miss H. Shelby Holbrook for the index.

### PUBLICATIONS EXAMINED.

#### SERIALS.

The following list contains the names of the serials examined in preparing this bibliography and the abbreviations used in the text references:

| | |
|---|---|
| L'Académie des Sciences, Comptes rendus hebdomadaires des Séances de. | Comptes rend. |
| Aerial Age Weekly | Aer. Age Weekly |
| Aeronautics | Aeron. |
| American Association of Petroleum Geologists, bulletin | Bull. Am. Assoc. Petroleum Geol. |

| | |
|---|---|
| American Chemical Society, journal | Jour. Am. Chem. Soc. |
| American Gas Engineering Journal | Am. Gas Eng. Jour. |
| American Institute of Mining Engineers, bulletins | Bull. Am. Inst. Min. Eng. |
| American Institute of Mining Engineers, transactions | Trans. Am. Inst. Min.Eng. |
| American Journal of Science | Am. Jour. Sci. |
| American Leather Chemists Association, journal | Jour. Am. Leather Chemists Assoc. |
| American Machinist | Am. Mach. |
| American Medical Association, journal | Jour. Am. Med. Assoc. |
| American Mining Congress, proceedings | Proc. Am. Min. Cong. |
| American Society of Civil Engineers, proceedings | Proc. Am. Soc. Civ. Eng. |
| American Society of Civil Engineers, transactions | Trans. Am. Soc. Civ. Eng. |
| American Society of Mechanical Engineers, journal | Jour. Am. Soc. Mech. Eng. |
| American Society of Naval Engineers, journal | Jour. Am. Soc. Naval Eng. |
| American Society for Testing Materials, proceedings | Proc. Am. Soc. Test. Mat. |
| Analyst | Analyst. |
| Annales des Falsifications et des Fraudes | Annales falsif. |
| Automotive Industries | Automotive Industries. |
| Aviation and Aeronautical Engineering | Av. and Aeronaut. Eng. |
| Boletin del Petróleo | Bol. Petróleo. |
| California Academy of Sciences, proceedings | Proc. California Acad. Sci. |
| Canadian Engineer | Canadian Engineer. |
| Canadian Mining Institute, bulletin | Bull. Canadian Min. Inst. |
| Canadian Mining Institute, transactions | Trans. Canadian Min. Inst. |
| Canadian Mining Journal | Canadian Min. Jour. |
| Chemical Abstracts | Chem. Abs. |
| Chemical Engineer | Chem. Eng. |
| Chemical and Metallurgical Engineering (formerly Metallurgical and Chemical Engineering). | Chem. and Met. Eng. |
| Chemical News | Chem. News. |
| Chemical Society, journal | Jour. Chem. Soc. |
| Chemist-Analyst | Chem.-Anal. |
| Cleveland Engineering Society, journal | Jour. Cleveland Eng. Soc. |
| Cornell Civil Engineer (Jan.–June) | Cornell Civ. Eng. |
| Economic Geology | Econ. Geol. |
| Engineer | Engineer. |
| Engineering | Engineering. |
| Engineering and Contracting | Eng. and Contr. |
| Engineering and Mining Journal | Eng. and Min. Jour. |
| Engineering Club of Philadelphia, journal | Jour. Eng. Club Philadelphia. |
| Engineering News-Record | Eng. News-Rec. |
| Engineers' Society of Western Pennsylvania, proceedings | Proc. Eng. Soc. West. Pa. |
| Franklin Institute, journal | Jour. Franklin Inst. |
| Gas Age | Gas Age. |
| Gas Engine | Gas Engine. |
| Gas Journal | Gas Jour. |
| Gas Record | Gas Rec. |
| Gas World | Gas World. |
| Génie Civil | Génie Civil. |
| Geological Magazine | Geol. Mag. |
| Geological Society of America, bulletin | Bull. Geol. Soc. Am. |
| Good Roads | Good Roads. |
| Horseless Age (changed June, 1918, to Motor Age) | Horseless Age. |

| | |
|---|---|
| Industrial Management | Ind. Management. |
| Institution of Mining Engineers, transactions | Trans. Inst. Min. Eng. |
| Institution of Petroleum Technologists, journal | Jour. Inst. Petroleum Tech. |
| Intercolonial Gas Journal of Canada | Intercol. Gas Jour. Canada. |
| International Marine Engineering | Int. Marine Eng. |
| Journal of Electricity | Jour. Elec. |
| Journal of Geology | Jour. Geol. |
| Journal of Industrial and Engineering Chemistry | Jour. Ind. and Eng. Chem. |
| Lubrication (discontinued, Nov., 1918) | Lubrication. |
| Manufacturers Record | Manufac. Rec. |
| Mechanical World | Mech. World. |
| Metallurgical and Chemical Engineering (Changed July 1, 1918, to Chemical and Metallurgical Engineering). | Met. and Chem. Eng. |
| Mining American (discontinued June, 1918) | Mining American. |
| Mining and Oil Bulletin | Min. and Oil Bull. |
| Mining and Scientific Press | Min. and Sci. Press. |
| Motor Age (formerly Horseless Age) | Motor Age. |
| Motorship | Motorship. |
| Municipal Engineering (Changed July 1, 1918, to Municipal and County Engineering). | Munic. Eng. |
| Municipal Journal | Munic. Jour. |
| National Academy of Sciences, proceedings | Proc. Nat. Acad. Sci. |
| National Engineer | National Eng. |
| National Fire Protection Association Quarterly | Nat. Fire Protect. Assoc. Quart. |
| National Gas Engine Association, bulletin | Bull. Nat. Gas Eng. Assoc. |
| National Petroleum News | Nat. Petroleum News. |
| Natural Gas and Gasoline Journal | Nat. Gas and Gasoline Jour. |
| Natural Gas Association of America, proceedings | Proc. Nat. Gas Assoc. Am. |
| La Nature | La Nature. |
| Nautical Gazette | Nautical Gaz. |
| Oil Age | Oil Age. |
| Oil and Gas Journal | Oil and Gas Jour. |
| Oil, Paint and Drug Reporter | Oil, Paint and Drug Rep. |
| Oil Trade Journal | Oil Trade Jour. |
| Oildom | Oildom. |
| Page's Engineering Weekly | Page's Eng. Weekly. |
| Petroleum | Petroleum. |
| Petroleum Age | Petroleum Age. |
| Petroleum Review | Petroleum Rev. |
| Petroleum World | Petroleum World. |
| Power | Power. |
| Power Plant Engineering | Power Plant Eng. |
| Queensland Government Mining Journal | Queensland Gov't. Min. Jour. |
| Railroad Red Book | Railroad Red Book. |
| Railway Age | Rwy. Age. |
| Railway Engineer | Rwy. Eng. |
| Railway Review | Rwy. Rev. |
| Resources of Tennessee | Resources of Tennessee. |
| Revue génerale des sciences pures et appliquées | Rev. gén. sci. |
| Royal Society of Arts, journal | Jour. Roy. Soc. Arts. |
| Salt Lake Mining Review | Salt Lake Min. Rev. |

| | |
|---|---|
| Science | Science. |
| Scientific American | Sci. Am. |
| Scientific American Supplement | Sci. Am. Suppl. |
| Society of Automotive Engineers, journal | Jour. Soc. Auto. Eng. |
| Society of Chemical Industry, journal | Jour. Soc. Chem. Ind. |
| Society of Engineers (London), transactions | Trans. Soc. Eng. |
| South African Journal of Science | South African Jour. Sci. |
| South African Mining Journal | South African Min. Jour. |
| Standard Oil Bulletin | Standard Oil Bull. |
| Texaco Star | Texaco Star. |
| U. S. Artillery Journal | U. S. Artillery Jour. |
| University of California, Department of Geology, bulletin | Bull. Univ. California Dept. Geol. |
| Washington Academy of Sciences, journal | Jour. Wash. Acad. Sci. |
| Western Society of Engineers, journal | Jour. West. Soc. Eng. |

### OFFICIAL PUBLICATIONS.

Official publications consulted in preparing this bibliography were as follows:

Bureau of Mines, bulletins and technical papers.

Bureau of Standards, circulars and technologic papers.

Corps of Engineers, professional memoirs.

Geological Survey, bulletins, professional papers, geologic folios, Mineral Resources of the United States.

Department of Agriculture, bulletins.

Department of Commerce, Commerce Reports (daily).

Patent Office Gazette.

Such reports of State geological surveys and mining bureaus and foreign geological surveys and mining bureaus as were published in 1918.

### SCHEME OF CLASSIFICATION.

The scheme of classification followed in arranging the references is outlined below.

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  - .004 Transportation, storage, and distribution.
  - .005 Properties and their determination.
  - .006 Refining and refineries.
  - .007 Utilization.
  - .008 Statistics (including field development, crude production, transportation, storage, and distribution, refineries and refined products, consumption, trade reports, financial and market statistics, general review of the industry).
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1. Abraham, Herbert. Asphalts and allied substances. Their occurrence, modes of production, uses in the arts and methods of testing. New York, 1918. 606 pp. A very full treatise, covering, under general considerations, history, terminology, and classification of bituminous substances, chemistry of bituminous substances, geology and origin, and statistics of production, import, and export (U. S. G. S. figures); under semisolid and solid native bituminous substances, chapters on general methods of refining and on the occurrence and properties of various individual substances; under tars and pitches, chapters on methods of producing tars and on various kinds of tars and pitches; under manufactured products and their uses, descriptions of various commercial products; and under methods of testing, various physical and chemical tests. A bibliography chronologically arranged is appended, covering the literature from 1847 to 1917.
2. Cross, Roy. Petroleum, asphalt and natural gas. Bull. 14, Kansas City Testing Laboratory, Kansas City, Mo., 1918. 248 pp. Statistical and technical information, data, and tables. Chapter on refining patents.

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[1] Figures in parentheses refer to classification numbers; see pp. 6 to 15.

# COUNTRIES AND REGIONS (100).

## NORTH AMERICA (110).

### GEOLOGY AND ORIGIN.

3. Grabau, A. W. Relation of the oil-bearing to the oil-producing formations in the Paleozoic of North America. Bull. Geol. Soc. Am., vol. 29, March, 1918, pp. 92–93 (Abstract). Considers the following oil-bearing formations: Trenton limestone, Onondaga (Corniferous) limestone, Upper Devonic sands of southwestern New York and northwestern Pennsylvania, and the Berea sandstone.

*See also* No. 1716.

## UNITED STATES (111).

### GENERAL AND HISTORICAL.

4. Heyne, H. R. Development of petroleum industry in America. Evening Post Oil Industry Rev., March 2, 1918, pp. 7–8. A brief history of early days, and an account of later developments, particularly in refining.
5. Michel, F. L'industrie du gaz naturel en Amérique. Rev. gén. sci., t. 29, Jan. 15, 1918, pp. 13–21. General review.

### GEOLOGY AND ORIGIN.

6. Winchester, D. E. Oil shale in the United States. Railroad Red Book, vol. 35, Jan., 1918, pp. 33–36, 38. From Econ. Geol., vol. 12, Sept., 1917, pp. 505–518. Defines and describes oil shales and classifies them according to their geologic age. Outlines location and extent of deposits in the Green River formation of Colorado and Utah, and considers the origin of shale oil. Discusses the value of shale for distillation and compares conditions in the United States with those of Scotland.

*See also* Nos. 222, 1716.

### DEVELOPMENT AND PRODUCTION.

7. Wyer, S. S. The mineral industries of the United States. Natural gas: its production, service, and conservation. U. S. National Museum Bull. 102, part 7, 1918. 67 pp. Explains the fundamental principles of natural gas production, transmission, and distribution, and discusses its waste and conservation.

*See also* No. 47.

### TRANSPORTATION.

8. McDowell, J. C. Transportation of oil through pipe lines. Evening Post Oil Industry Rev., March 2, 1918, pp. 16–17. History of development of pipe lines in the United States and explanation of the system of operation.
9. Morrell, R. W. Recent developments in tank steamer construction. Trans. Soc. Naval Arch. and Marine Eng., vol. 25, 1917, pp. 73–84; discussion, pp. 85–87. Jour. Am. Soc. Naval Eng., vol. 30, Feb., 1918, pp. 157–166. Internat. Marine. Eng., vol. 23, Feb., 1918, pp. 78–83. Engineering, vol. 104, Dec. 28, 1917, pp. 687–689. Reviews the recent growth of the tank fleet, and discusses striking features of design, and standardization.

10. PETROLEUM. List of the principal pipe lines in the United States, their approximate mileage and capacities. Vol. 5, July, 1918, pp. 157, 159.

*See also* Nos. 7, 682, 695.

## PROPERTIES AND THEIR DETERMINATION.

10a. SHEPPARD, S. E. Navy fuel oil specifications and colloidal fuel. New York, The Submarine Defense Association, 1918. 6 pp. "An itemized comparison of British and U. S. A. naval fuel specifications, and the approximation thereto of colloidal fuel."

*See also* No. 899.

## REFINING AND REFINERIES.

11. ASHLEY, G. H. Cannel coal in the United States. U. S. Geol. Survey Bull. 659, 1918. 127 pp. Includes discussion of the use of cannel coal for oil making, with description of the distillation methods used.

12. GUISELIN, A. Les essences de pétrole. Les nouveaux moyens de production des essences de pétrole. Qualités et propriétés de ces essences. Précautions à prendre pour leur entreposage. Chimie et Industrie, t. 1, Sept. 1, 1918, pp. 359–377. Chem. Abs., vol. 12, Dec. 10, 1918, p. 2684. A detailed review of American methods and practices.

*See also* Nos. 4, 40, 927.

## UTILIZATION.

13. ENGINEERING. The marine oil engine in the United States. Vol. 106, Nov. 29, 1918, pp. 618–619. Reviews innovations being adopted in America.

14. UNITED STATES FUEL ADMINISTRATION. Fuel facts. Washington, August 1, 1918. 64 pp. Data on fuel oil and coal. 2d ed., Oct., 1918.

*See also* Nos. 10a, 1688.

## STATISTICS.

GENERAL REVIEW.

15. DAY, D. T. Petroleum and natural gas. The Mineral Industry during 1917 (New York, 1918), vol. 26, pp. 484–516. Statistical review, with bibliography of publications on petroleum for 1917.

16. RICHARDSON, CLIFFORD. Asphalt. The Mineral Industry during 1917. New York, 1918. Vol. 26, pp. 52–60. Statistical review.

FIELD DEVELOPMENT. NATURAL GAS.

17. NATURAL GAS AND GASOLINE JOURNAL. Location and description of new wells drilled in Kentucky, Tennessee, Ohio, Pennsylvania, West Virginia, Illinois, Indiana, Kansas, Louisiana, Oklahoma, and Texas. Also gives summary for all fields, by districts.

FIELD DEVELOPMENT. OIL AND GAS.

18. OIL AND GAS JOURNAL. Monthly statement gives location and initial production of completed wells, location of drilling wells, and summary for each field, by districts, with comparisons for preceding months.

19. U. S. GEOLOGICAL SURVEY. Mineral Resources, part 2, Nonmetals. Yearly report of development, by States.

IMPORTS AND EXPORTS OF PETROLEUM.

20. NORDHAUS, CHARLES. Export oil market conditions in 1917. Oil and Gas Jour., vol. 16, Feb. 7, 1918, pp. 42–44, 46. General statistical review.

21. UNITED STATES BUREAU OF FOREIGN AND DOMESTIC COMMERCE. Monthly summary of foreign commerce of the United States.

NEW INCORPORATIONS.

22. NATURAL GAS AND GASOLINE JOURNAL. Monthly statement lists new companies, chiefly natural gas companies, in the United States.

23. Oil Trade Journal. Monthly statement of new companies in all States.

24. Petroleum. Monthly list of recent incorporations of petroleum producing, refining, and jobbing companies and gas companies in all States.

Pipe-line Statistics.

25. Oil and Gas Journal. Monthly report gives runs, deliveries, and stocks in Kansas-Oklahoma field, Texas Panhandle, Caddo District of Louisiana, and in California, Pennsylvania, and Illinois.

26. Petroleum Age. Comparative pipe-line statistics for the United States. Monthly statement of runs, deliveries, gross stocks, and summary by fields.

27. United States Geological Survey. Mineral Resources, part 2, Nonmetals. Annual statistics.

Prices.

28. National Petroleum News. Weekly statement of prices of crude petroleum in all fields.

29. Oil Age. Monthly report of prices of crude in all fields, and of refined products of petroleum in Los Angeles.

30. Oil and Gas Journal. Weekly report of prices throughout the United States.

31. Oil Trade Journal. Monthly statement of crude and fuel oil prices.

32. Petroleum. Monthly report of prices in all fields.

33. United States Geological Survey. Mineral Resources, part 2, Non-metals. Annual report gives fluctuations in price for each field throughout the year.

Production.

34. Northrop, J. D. The crude petroleum industry in 1917. Evening Post Oil Industry Rev., March 2, 1918, pp. 6–7. Statistical.

35. U. S. Congress. Senate. Production of crude oil. Letter from the Director of the Bureau of Mines, transmitting, in response to a Senate resolution of Sept. 11, 1918, certain information in regard to the production and consumption of crude petroleum, and other mineral oils so far as statistics are available; also a letter in response to a Senate resolution of Sept. 13, 1918, transmitting certain information as to what relief the speedy enactment of the bill (S. 2812) to encourage and promote the mining of coal, phosphate, oil, gas, and sodium on the public domain will give to the threatened shortage in the supply of crude oil. 65th Cong., 2d sess., Doc. No. 280, Sept. 24, 1918. Washington, 1918. 16 pp.

36. United States Geological Survey. Mineral Resources, part 2, Non-metals. Annual report of output and value of petroleum, natural gas, natural-gas gasoline, and asphalt, by States.

Refining and Refineries.

37. Egloff, Gustav. Big increase in casinghead gasoline. Oil and Gas Jour., vol. 16, March 21, 1918, pp. 36, 38, 40. A statistical review of the casinghead gasoline industry from 1904 and a prediction for the year 1918.

38. National Petroleum News. Bureau statistics on refinery products. Vol. 10, Apr. 24, 1918. p. 7. Gives Bureau of Mines figures of output of refineries in the United States, by months, for 1917, the output for the last three months of 1917 as compared with the preceding quarter, and stocks on hand at refineries at the end of each of the last six months of 1917.

39. ——— Bureau statistics on refinery products. Vol. 10, Aug. 28, 1918, pp. 10–11. Shows output of refineries in the United States for the first six months of 1918, by fields and kind of product; stocks on hand at refineries at the close of each month; and Geological Survey figures showing crude petroleum marketed, apparently consumed, and in stock in the first half of 1918 and in the corresponding period of 1917, by fields and by months.

40. Oil and Gas Journal. Refinery statistics for year 1917. Vol. 16, Jan. 31, 1918, p. 30. Gives figures compiled by the Bureau of Mines for 1916 and nine months of 1917, showing amounts of crude oil run into stills and refined products manufactured therefrom and stocks on hand at the refineries at different periods. Also in Oil Age, vol. 14, Feb., 1918, p. 30, and Petroleum Age, vol. 5, Jan., 1918, pp. 26–27.

Tankage.

41. Petroleum Age. Monthly statement gives summary of oil in tankage, by fields.

*See also* Nos. 2, 14.

Directories, *see* No. 1723.

## ECONOMICS.

42. Fernald, R. H. Is our fuel supply nearing exhaustion? Jour. Cleveland Eng. Soc., vol. 11, Sept., 1918, pp. 103–122; discussion, pp. 122–126. Includes discussion of the future supply of petroleum and natural gas in the United States. *See also* Gen. Elec. Rev., vol. 21, Aug., 1918, pp. 542–555. Rwy. Rev., vol. 63, Aug. 24, 1918, pp. 271–275; Aug. 31, pp. 303–305. Read also before the Engineers' Club of Philadelphia, Feb. 19, 1918.

43. Fohs, Julius. Immediate sources of new oil supply. Oil and Gas Jour., vol. 17, Oct. 4, 1918, pp. 48–49. Considers possibilities of new territory in the United States, by fields.

44. Gilbert, C. G. and Pogue, J. E. The mineral industries of the United States. Petroleum: a resource interpretation. U. S. National Museum Bull. 102, part 6, 1918. 76 pp. A general review of the industry and discussion of its present limitations and the possibilities of increasing the future supply of petroleum and its products as a remedy for the fuel situation. Quoted in Engineering, vol. 106, Dec. 6, 1918, pp. 633–635; and in Oildom, vol. 8, Oct., 1918, pp. 753–754, 756, 758, 760, 762, 764, 766.

45. Hager, Dorsey. The search for new oil pools in the United States. Eng. and Min. Jour., vol. 105, Jan. 5, 1918, pp. 11–12. Reviews oil possibilities in various States, predicts the exhaustion of the country's oil resources and the necessary development of the oil shale deposits.

46. Knapp, I. N. An optimistic view of the future supply of oil. Jour. Eng. Club, Philadelphia, vol. 35–1, Jan., 1918, pp. 22–32. A review of past and present conditions in the oil and gas industries, concluding that an increased amount of oil will be supplied by this country for only a few years to come, that our maximum production will be reached in possibly twenty years, that the world's maximum production is far distant, and that shale oils and tars will supplement the supply of petroleum.

47. Manning, Van. H. Urges efficient methods in production. Nat. Petroleum News, vol. 10, Dec. 11, 1918, pp. 23–24. Discusses possibilities in the adoption of efficient methods in the oil industry, the future of the shale-oil industry, and the position of the United States in the world petroleum situation. *See also* Petroleum, vol. 6, Jan., 1919, pp. 69–70, 72, 74, 76, 78.

48. Wolf, J. H. G. Commercial aspects of the shale-oil industry. West. Eng., vol. 9, June, 1918, pp. 222–223. Discusses various factors affecting the successful development of American oil shale deposits. *See also* Oil and Gas Jour., vol. 17, July 19, 1918, p. 48.

## LEGISLATION AND LEGAL REGULATIONS.

49. Ball, M. W. The Walsh-Pittman bill. Evening Post Oil Industry Rev., March 2, 1918, pp. 28–30. An analysis of the bill (S. 2812) as it affects the oil industry. For Bill as amended by the House on May 14, 1918, see Oil Age, vol. 14, May, 1918, pp. 18–22.

50. MINING CONGRESS JOURNAL. Oil shale locations. Vol. 4, No 1, Jan., 1918, pp. 7–8. Discusses the location of claims under the placer law.

51. OIL TRADE JOURNAL. Oil men agree on leasing legislation. Vol. 9, April, 1918, pp. 44–46, 48, 50. Gives amendments to the Ferris Bill proposed by a general committee of operators from California, Colorado, Wyoming, Montana, and Alaska, to the House Committee on Public Lands.

52. ——— Shaping oil land leasing policy at Washington. Vol. 9, Feb., 1918, pp. 32–34. Discussion of the provisions of the Walsh-Pittman bill (S. 2812) which are of interest to the oil industry.

53. U. S. CONGRESS. HOUSE. Committee on Public Lands. Oil leasing lands. Hearings before the Committee on the public lands, House of Representatives, 65th Congress, 2nd sess., on H. R. 3232, a Bill to authorize exploration for and disposition of coal, phosphate, oil, gas, potassium, or sodium, and S. 2812, an Act to encourage and promote the mining of coal, phosphate, oil, gas, and sodium on the public domain. Feb. 5, 1918–March 6, 1918. Washington, 1918. 1292 pp.

54. SENATE. An Act to encourage and promote the mining of coal, phosphate, oil, gas, and sodium on the public domain. S. 2812, 65th Cong., 2nd sess. Passed Jan. 7, 1918. Referred to the Committee on Public Lands, Jan. 9, 1918. Known as the Walsh-Pittman bill. *See also* Nos. 49, 52, 53. For Bill as amended by the House on May 14, 1918; see Oil Age, vol. 14, May, 1918, pp. 18–22.

55. SENATE. A Bill to further provide for the common defense and general welfare of the United States with respect to the production, use and conservation of oil and gas in naval petroleum reserves, and for other purposes. S. 3521, 65th Cong., 2nd sess. Read in the Senate Jan. 16, and Jan. 18, 1918, and referred to the Committee on naval affairs. Known as the Swanson bill. *See also* No. 55a.

55a. SENATE COMMITTEE ON NAVAL AFFAIRS. Oil and gas lands in naval petroleum reserves. Hearings before a subcommittee of the Committee on Naval Affairs, U. S. Senate, 65th Congress, 2d sess., on S. 3521, a bill to further provide for the common defense and general welfare of the United States with respect to the production, use, and conservation of oil and gas in naval petroleum reserves, and for other purposes. Washington, Feb. 6, Feb. 28, Mar. 14, 1918. 217 pp.

56. SENATE COMMITTEE ON PUBLIC LANDS. Leasing of oil lands. Statement of Thomas J. Walsh before Committee on Public Lands of Senate, 64th Congress, 1st session, on H. R. 406, authorizing exploration for and disposition of coal, phosphate, oil, gas, and potassium or sodium. 1918. 15 pp.

*See also* Nos. 35, 1693–1695.

## APPALACHIAN FIELD. (111.1)

### GEOLOGY.

57. SHAW, E. W. Ages of peneplains of the Appalachian province. Bull. Geol. Soc. Am., vol. 29, Sept., 1918, pp. 575–586.

STATISTICS, *see* Nos. 15–19, 22–41.

## INDIANA (111.11).

### GEOLOGY.

57a. BARRETT, EDWARD. Report of the department of geology and natural resources. Year Book of the State of Indiana for the year 1917 (Indianapolis, 1918), pp. 234-241. Includes brief review of the petroleum and natural gas resources of the State.

STATISTICS, *see* Nos. 15–19, 22–41. LEGISLATION AND LEGAL REGULATION, *see* No. 1701.

## KENTUCKY (111.12).

OCCURRENCE (ASPHALT), *see* No. 1.

### GEOLOGY AND ORIGIN.

**58.** BUTTS, CHARLES. Mississippian formations of western Kentucky. I. Descriptions and correlation of the Mississippian formations of western Kentucky, by Charles Butts, pp. 7–119. II. The formations of the Chester series in western Kentucky and their correlates elsewhere, by E. O. Ulrich, pp. 1–272. Kentucky Geol. Survey, 1917. (1917 on title page and 1918 on cover.)

**59.** LEONARD, W. C. Facts concerning the Kentucky oil fields; scientific reasons for the accumulation of oil in Kentucky and the probable location of undeveloped pools. New York, 1918. 10 pp.

**60.** PEMBERTON, J. R. A résumé of the past year's development in Kentucky from a geological standpoint. Bull. Am. Assoc. Petroleum Geol., vol. 2, 1918, pp. 38–52. Reviews developments of 1917.

**60a.** RUSSELL, P. G. The coals of Sexton Creek and the tributaries of South Fork on the right between the mouth of Redbird Creek and the mouth of Sexton Creek. Kentucky Geol. Survey, Fourth Series, vol. 4, part 3, 1918, pp. 203–205. Includes discussion of possible oil and gas structures.

**61.** SHAW, E. W. The Irvine oil field, Estill County, Kentucky. U. S. Geol. Survey Bull. 661, 1918, pp. 141–191. Published also as separate Bull. 661–D, 1917. (*See* No. 66, 1917 Bibliography.) A detailed geological study of the field, with suggestions for prospecting. Gives statistics of production of the field, well data, analysis of the oil, and the composition of Ohio black shale found there.

**62.** THAYER, W. N. The Kentucky oil fields. Eng. and Min. Jour., vol. 105, Apr. 27, 1918, pp. 781–785. Describes formatioms in the Kentucky fields and general conditions attending development.

DEVELOPMENT AND PRODUCTION, *see* Nos. 61, 62; PROPERTIES, *see* Nos. 1, 31; STATISTICS, *see* Nos. 15–19, 22–41, 61; LEGISLATION AND LEGAL REGULATION, *see* No. 1701.

## NEW YORK (111.13).

### GEOLOGY AND ORIGIN.

**63.** CHADWICK, G. H. Stratigraphy of the New York Clinton. Bull. Geol. Soc. Am., vol. 29, June 30, 1918, pp. 327–368.

*See also* No. 3.

STATISTICS, *see* Nos. 15–19, 22–41.

### LEGAL REGULATION.

**64.** NATIONAL FIRE PROTECTION ASSOCIATION QUARTERLY. Excluding gasoline from sewers. Vol. 11, Jan., 1918, pp. 281–287. Tells of ordinance of New York City requiring garages to install oil separators to prevent gasoline from reaching sewers and thus causing explosions. Gives plans, specifications, and regulations of the New York fire department for oil separator installations.

*See also* No. 1701.

## OHIO (111.14).

### GEOLOGY AND ORIGIN.

**65.** PANYITY, L. S. Lithology of the Berea sand in southeastern Ohio, and its effect on production. Bull. Am. Inst. Min. Eng., August, 1918, pp. 1317–1320. Points out the fact that there are well-defined thin-sand and thick-sand zones in this part of the Berea formation and that the thin-sand territory is by far the better oil and gas producer of the two.

**66.** PANYITY, L. S. The southern extremity of the "Clinton" gas pools in Ohio. Trans. Am. Inst. Min. Eng., vol. 57, 1918, pp. 984–988. Published first in Bull. Am. Inst. Min. Eng., June, 1917, pp. 963–967. Geological description of this region and account of oil and gas development there.

**67.** ROGERS, G. S. The Cleveland gas field, Cuyahoga County, Ohio, with a study of gas pressure. U. S. Geol. Survey Bull. 661, 1918, pp. 1–68. Published also as separate Bull. 661–A, 1917. (*See* No. 72, 1917 Bibliography.) Gives history and development of the field, its stratigraphy and structure, its gas resources, describing the gas-bearing and pools, strata and a detailed discussion of the decline of wells and the factors controlling the production and life of a well.

**68.** STOUT, WILBER. Geology of Muskingum County. Ohio Geol. Survey, 4th Ser., Bull. 21, 1918. Columbus, 1918. 351 pp. Contains chapter (pp. 286–326) on "Search for oil and gas," describing oil and gas formations and occurrences in this county.

#### DEVELOPMENT AND PRODUCTION.

*See* No. 79.

#### TRANSPORTATION.

**69.** OIL AND GAS JOURNAL. Advice of Commission about gas compression. Vol. 16, Feb. 14, 1918, p. 48. Gives recommendations of the Ohio Public Utilities Commission as to the use of compressor and booster stations as a means of obtaining better gas pressure, in response to a request for advice by the Oklahoma State Corporation Commission.

STATISTICS, *see* Nos. 15–19, 22–41; LEGISLATION AND LEGAL REGULATION, *see* No. 1701.

### PENNSYLVANIA (111.15).

#### GEOLOGY AND ORIGIN.

**70.** BUTTS, CHARLES. Geologic section of Blair and Huntingdon counties, central Pennsylvania. Am. Jour. Sci., 4th Ser., vol. 46, Sept., 1918, pp. 523–537. Notes, mainly on new formations and names.

*See also* No. 3.

#### DEVELOPMENT AND PRODUCTION.

**71.** JAMES, H. G. Flooding the Bradford field. Oildom, vol. 8, October, 1918, pp. 795–796. Describes method of flooding and discusses its effects.

**72.** WHITE, I. C. Records of three very deep wells drilled in the Appalachian oil fields of Pennsylvania and West Virginia. Bull. Geol. Soc. Am., vol. 29, March, 1918, p. 96. (Abstract.)

**73.** WOOD, H. L. How deep is a well? Petroleum, vol. 6, Dec., 1918, pp. 90, 92, 94. Citations of deep drilling in various parts of the world, including Pennsylvania, Galicia, West Virginia, Texas, Oklahoma and Kansas, and California.

*See also* Nos. 77, 78, 79.

#### REFINING AND REFINERIES.

**74.** OILDOM. Shale oil in Pennsylvania. Vol. 8, Nov., 1918, p. 861. Tells of the early industry in this State and its decline with the production of petroleum from oil sands, and discusses possibilities of the future in Pennsylvania shale oil. Report by the State Geologist of Pennsylvania. Also in Nat. Gas and Gasoline Jour., vol. 12, Nov., 1918, pp. 384–385.

UTILIZATION, *see* No. 1236; STATISTICS, *see* Nos. 15–19, 22–41; LEGISLATION AND LEGAL REGULATION, *see* No. 1701.

### WEST VIRGINIA (111.16).

#### HISTORY AND OCCURRENCE.

**75.** OIL AND GAS JOURNAL. West Virginia natural gas resources. Vol. 17, Aug. 9, 1918, p. 40. Data from thesis, by G. E. Taylor, showing the important position of West Virginia in this industry.

### GEOLOGY AND ORIGIN.

**76.** Reger, D. B. Barbour and Upshur counties and western portion of Randolph County. With introduction by I. C. White, on deep well borings, and C. E. Van Orstrand, on deep well temperatures. West Virginia Geol. Survey, County Reports, 1918. 867 pp. Accompanied by case of topographic and geologic maps. Gives history and physiography, stratigraphy, mineral resources, including a detailed chapter (pp. 300–389) on petroleum and natural gas, and paleontology.

#### DEVELOPMENT AND PRODUCTION.

**77.** Oil and Gas Journal. Deepest well in world is drilled 7,363 feet. Vol. 16, March 14, 1918, p. 48. Tells of the work of drilling this well in West Virginia in search of the Clinton sand from which it is hoped that an additional, if not abundant supply of Appalachian oil may be obtained. Described also in Oil Age, vol. 14, March, 1918, pp. 21–22. West. Eng., vol. 9, May, 1918, p. 190.

**78.** Van Orstrand, C. E. Apparatus for the measurement of temperatures in deep wells, and temperature determinations in some deep wells in Pennsylvania and West Virginia. West Virginia Geol. Survey County Reports, Barbour and Upshur counties and western portion of Randolph County, 1918, pp. lxvi–ciii. (*See also* No. 76.)

**79.** White, I. C. The deepest well in the world and the next deepest in America. Proc. Nat. Gas Assoc. of Am., vol. 10, 1918, pp. 80–99. Nat. Gas and Gasoline Jour., vol. 12, Nov., 1918, pp. 387–395. Logs and temperature measurements for the deepest well in the world, near Clarksburg, W. Va., and for the second deepest, near McDonald, Pa. History of drilling operations, description of equipment, etc., are also given. *See also* Oil and Gas Jour., vol. 17, June 6, 1918, pp. 43–44, 46–47, 50.

**80.** ———. Discussion of the records of some very deep wells in the Appalachian oil fields of Pennsylvania, Ohio, and West Virginia. West Virginia Geol. Survey County Reports, Barbour and Upshur counties and western portion of Randolph County, 1918, pp. xxv–lxv. (*See also* No. 72.) Includes description of the deepest well in the world, with statistics.

*See also* Nos. 72, 73, 76.

Properties, *see* No. 1169; Statistics, *see* Nos. 15–19, 22–41, 75; Legislation and legal regulation, *see* No. 1701; Maps, *see* No. 75.

#### LEGISLATION AND CONSERVATION.

80a. Taylor, G. E. The conservation of natural gas in West Virginia. Univ. West Virginia, College of Eng., Bull., series 4, July, 1918, 32 pp. Brief history of development and discussion of supply and demand, distribution, conservation, and legislation in regard to natural gas.

## ILLINOIS FIELD. (111.2)

### ILLINOIS (111.20).

### HISTORY AND OCCURRENCE.

**81.** Wheeler, H. A. Oil and gas fields of Illinois. Eng. and Min. Jour., vol. 105, Jan. 26, 1918, pp. 181–184. Gives history of the fields, mode of occurrence of the oil, quality of the oil, operating costs, etc.

Geology, *see* No. 81.

### DEVELOPMENT AND PRODUCTION.

82. NEBEL, M. L. Cementation in the Illinois oil field. Eng. and Min. Jour., vol. 105, June 15, 1918, pp. 1080–1082. Describes methods developed as a result of local conditions in the Illinois field and gives production figures for a representative pool before and after cementation. Gives also costs of cementing and results obtained in six individual wells.

*See also* No. 81.

### UTILIZATION.

83. FLOOD, W. H. The asphalt roads of Cook County, Illinois. Munic. and County Eng., vol. 55, Oct., 1918, pp. 124–125. Includes specifications for Trinidad asphalt cement and requirements for bituminous binders.

84. YERKES, A. P. and CHURCH, L. M. Tractor experiences in Illinois. Jour. Soc. Automotive Eng., vol. 3, October, 1918, pp. 269–274. Includes discussion of fuel and lubricating oil cost and consumption.

STATISTICS, *see* Nos. 15–19, 22–41; LEGISLATION AND LEGAL REGULATION, *see* No. 1701.

## MID-CONTINENT FIELD. (111.3)

### GEOLOGY AND ORIGIN.

85. BLOESCH, EDWARD. Value of oil geology in the Mid-Continent field. Bull. Am. Assoc. Petroleum Geol., vol. 2, 1918, pp. 124–130; discussion, pp. 131–132. Concludes that at least three-fourths of the oil and gas pools of this field could have been located by the geologist using surface indications only, this conclusion being based on a study of the numerical proportion between the pools known to have accumulated on account of structure and those due entirely to sand conditions.

86. HAGER, DORSEY. A few notes on the future work of the petroleum geologist in the Mid-Continent oil fields. Trans. Am. Inst. Min. Eng., vol. 57, 1918, pp. 891–893. Published first in Bull. Am. Inst. Min. Eng., Oct., 1917, pp. 1793–1795. States that since the chances of finding new pools in Kansas and Oklahoma are slight, future work will be in the development of present pools; points out the importance of cooperation between engineer and geologist.

87. JEWELL, W. R. The present and future of the Mid-Continent field as seen by a geologist. Oil Trade Jour., vol. 9, July, 1918, pp. 58, 60, 62. An optimistic prophecy of the future production of the field, based on a study of its geologic structure and its past record.

### DEVELOPMENT AND PRODUCTION.

88. HAGER, DORSEY. Overcoming water troubles in the Mid-Continent fields. Oil Trade Jour., vol. 9, Sept., 1918, pp. 40, 42. Discusses essential factors in shutting off water scientifically and as practiced in the Mid-Continent fields.

89. HAGER, DORSEY AND MCPHERSON, G. W. Water troubles in the Mid-Continent oil fields, and their remedies. Bull. Am. Inst. Min. Eng., Oct., 1918, pp. 1621–1627. Classifies water troubles as to effects, classifies water occurrences and the sources of water flooding, and discusses mud-fluid and cementing methods as remedies. Discussion, Bull. Am. Inst. Min. Eng., May, 1919, pp. 771–774, by I. N. Knapp. Reprinted in full in Nat. Petroleum News, vol. 11, Feb. 26, 1919, pp. 32, 34–36.

90. MOORE, P. T. Enormous increase in cost of drilling wells. Oil Trade Jour., vol. 9, Sept., 1918, pp. 32–33. Discusses causes of increased cost of drilling, particularly in the Mid-Continent fields.

91. TOUGH, F. B. Shutting off water encroachment. Oil and Gas Jour., vol. 17, Sept. 13, 1918, pp. 38, 40. Tells of the use of Portland cement in the Mid-Continent oil fields for excluding water from oil and gas-bearing strata of producing wells.

*See also* Nos. 595, 596, 647.

### TRANSPORTATION, STORAGE, AND DISTRIBUTION.

**92.** Bradley, O. U. Gaging and storage of oil in the Mid-Continent field. Bull. Am. Inst. Min. Eng., March, 1918, pp. 677–686. Explains interesting features of the practice of handling the oil, such as strapping and tank calculations, restrapping due to variation of conditions, production accounting, gage tickets, gaging of steel tanks, etc.

### REFINING AND REFINERIES.

**92a.** Mid-Continent Oil and Gas Association. Report of special casing-head gasoline committee, Tulsa, Okla., June, 1918. 28 pp. Report to be laid before the Treasury Department, giving a review of the controlling features of the casing-head gasoline industry, and presenting conclusions to the effect that a measure of relief from excessive war profits taxation would be helpful and should be afforded. A means of affording this relief is suggested.

Statistics, *see* Nos. 15–19, 22–41.

## KANSAS (111.31).

### GEOLOGY AND ORIGIN.

**93.** Berger, W. R. The relation of the Fort Scott formation to the Boone chert in southeastern Kansas and northeastern Oklahoma. Jour. Geol., vol. 26, Oct.–Nov. 1918, pp. 618–621.

**94.** Darton, N. H. The structure of parts of the central Great Plains. U. S. Geol. Survey Bull. 691–A, 1918. 26 pp. Includes parts of Kansas, Nebraska, South Dakota, Colorado, and Wyoming.

**95.** Fohs, F. J. One-third of field still undeveloped. Survey of Oklahoma and Kansas brings forth some interesting observations. Oil and Gas Jour., vol. 16, Apr. 18, 1918, pp. 38–40. Outlines the major possibilities of these States, naming and describing the productive and prospective oil areas.

**96.** Moore, R. C. Geologic history of the crystalline rocks of Kansas. Bull. Am. Assoc. Petroleum Geol., vol. 2, 1918, pp. 98–112; discussion, pp. 112–113. Study of the origin and age of the crystalline rocks and the geologic history of the area in which they are found.

**97.** Perrine, Irving. Geological conditions in central Kansas. Bull. Am. Assoc. Petroleum Geol., vol. 2, 1918, pp. 70–96; discussion, pp. 96–97. Gives stratigraphy and structure of this part of the State and representative well logs.

**98.** Whitaker, W. A., Estes, Clarence, and Campbell, F. W. The petroleum industry in Kansas. Eng. and Min. Jour., vol. 105, May 4, 1918, pp. 817–821. History of oil and gas development in the State, production statistics, drilling record, by counties, costs of drilling, geologic occurrence and properties of Kansas oils.

**99.** Wright, Park. Granite in Kansas wells. Trans. Am. Inst. Min. Eng., vol. 57, 1918, pp. 906–913. Published first in Bull. Am. Inst. Min. Eng., Aug., 1917, pp. 1113–1120. Offers a theory for the presence of the granite and draws conclusions which will aid in determining the prospective oil and gas value of the area studied. Gives general history of the tests in which granite has been reported.

*See also* No. 85.

### DEVELOPMENT AND PRODUCTION.

**100.** National Petroleum News. Line up to fight water menace in Kansas fields. Vol. 10, Oct. 2, 1918, pp. 35–36. Tells of the recent organization of operators of Butler County for solving the problem of water infiltration, including opinions of operators as to the source of the water.

**101.** OIL TRADE JOURNAL. Butler County, Kansas, is a model of scientific and efficient oil field operation. Vol. 9, July, 1918, p. 22. Tells of the success of scientific methods in all operations in this field.

**102.** SHIDEL, H. R. Cement plugging for exclusion of bottom water in the Augusta field, Kansas. Bull. Am. Inst. Min. Eng., Oct., 1918, pp. 1613–1620. Discussion, April, 1919, pp. 711–716, by Mowry Bates, A. W. Ambrose, I. N. Knapp, Eugene Coste, and David White. Summarizes the results obtained from the preliminary cementing of wells in an effort to cut off the bottom water, concluding with an enumeration of the disadvantages and advantages of cementing.

*See also* Nos. 73, 97, 98, 596, 658.

PROPERTIES AND THEIR DETERMINATION, *see* No. 98; STATISTICS, *see* Nos. 15–19, 22–41.

#### DIRECTORIES.

**103.** NESSLY, M. E. Illustrated directory of Kansas oil men. Chicago and Detroit 1918. 95 pp.

**103a.** POWELL, J. A. Powell's oil and gas directory. Bartlesville, Okla., 1918. 148 pp. Gives oil and gas companies in Kansas, Oklahoma, and Texas.

LEGISLATION AND LEGAL REGULATION, *see* No. 1701.

### LOUISIANA, NORTHERN (111.32).

OCCURRENCE (ASPHALT), *see* No. 1.

#### GEOLOGY AND ORIGIN.

**104.** BATES, MOWRY. The oil and gas fields of northern Louisiana. Bull. Am. Assoc. Petroleum Geol., vol. 2, 1918, pp. 61–69. Gives general geologic features, occurrence of the oil and gas, production figures, and brief descriptions of the various fields.

**105.** MATSON, G. C., AND HOPKINS, O. B. The De Soto-Red River oil and gas field, Louisiana. U. S. Geol. Survey Bull. 661, 1918, pp. 101–140. Published also as separate Bull. 661–C, 1917. Gives geology (stratigraphy and structure) of the field, and describes the oil and gas bearing formations in detail. Discusses the relation of the occurrence of the oil and gas to the structure of the sands and associated formations. Gives analyses of the oil and gas found in this field, and statistics of production.

#### DEVELOPMENT AND PRODUCTION.

**106.** NATURAL GAS ASSOCIATION OF AMERICA, PROCEEDINGS. Report of committee on gas conservation. Vol. 10, 1918, pp. 171–172. Cites instances of flagrant waste of gas in northern Texas and in Louisiana and states conditions in Oklahoma and California in respect to natural gas conservation.

*See also* No. 612.

PROPERTIES AND THEIR DETERMINATION, *see* No. 105.

#### REFINING AND REFINERIES.

**107.** OIL AND GAS JOURNAL. Carbon industry is opposed by Smith. Vol. 16, Jan. 10, 1918, p. 32. Quotes statement of State Senator L. R. Smith, of Louisiana, that the manufacture of carbon from the natural gas of the State will waste the gas unnecessarily and threaten the future supply.

#### UTILIZATION.

**107a.** WEIL, L. S. Fuel conservation in Louisiana. Proc. Louisiana Eng. Soc., vol. 4, Dec., 1918, pp. 206–223; discussion, pp. 223–228. Includes discussion of use and advantages of fuel oil, comparing cost of operating with fuel oil and coal.

### STATISTICS.

**108.** Oil Trade Journal. Texas and Louisiana output. Monthly statement.
*See also* Nos. 15–19, 22–41, 105.
Legislation and Legal Regulation, *see* No. 1701.

## OKLAHOMA (111.33).

Occurrence and Properties (asphalt), *see* No. 1.

### GEOLOGY AND ORIGIN.

**109.** Beal, C. H. Geologic structure in the Cushing oil and gas field, Oklahoma, and its relation to the oil, gas, and water. Trans. Am. Inst. Min. Eng., vol. 57, 1918, pp. 894–905. Published first in Bull Am. Inst. Min. Eng., Aug., 1917, pp. 1101–1112. Abstract of U. S. Geol. Survey Bull. 658, 1917. Results of a study of the formations containing oil, gas, and water and the relations of these substances in the formations, with a view to aiding in the work of conservation of oil and gas in this and other fields by showing the value of geology in developing and operating a field.

**110.** Bowen, C. F. Structure and oil and gas resources of the Osage Reservation, Oklahoma. T. 24 N., R. 10 E. U. S. Geol. Survey Bull. 686–D, 1918. 10 pp.

**111.** ——— Structure and oil and gas resources of the Osage Reservation, Oklahoma. T. 28 N., RS. 9 and 10 E.; T. 29 N., R. 10 E. U. S. Geol. Survey Bull. 686–F, 1918. 16 pp.

**112.** ——— Structure and oil and gas resources of the Osage Reservation, Oklahoma. TPS. 24, 25, and 26 N., RS. 6 and 7 E.; TPS. 25 and 26 N., R. 5 E.; T. 26 N., R. 4 E. U. S. Geol. Survey Bull. 686–L, 1918. 12 pp.

**113.** Burton, G. E. New development for oil and gas in Oklahoma during the past year and its geological significance. Bull. Am. Assoc. Petroleum Geol., vol. 2, 1918, pp. 53–59. An account of new development in 1917, under two general heads: development showing oil or gas in or closely associated with the base of the Permian; and development showing oil or gas in or closely associated with the top of the Mississippian.

**114.** Clark, F. R. Structure and oil and gas resources of the Osage Reservation, Oklahoma. T. 26 N., RS. 9, 10, and 11 E. U. S. Geol. Survey Bull. 686–I, 1918. 28 pp.

**115.** Emery, W. B. Structure and oil and gas resources of the Osage Reservation, Oklahoma. T. 23 N., R. 11 E.; TPS. 22 and 23 N., R. 12 E. U. S. Geol. Survey Bull. 686–B, 1918. 9 pp. Stratigraphy and structural features are given.

**116.** Fath, A. E. Structure of the northern part of the Bristow Quadrangle, Creek County, Oklahoma, with reference to petroleum and natural gas. U. S. Geol. Survey Bull. 661, 1918, pp. 69–99. Published also as separate Bull. 661–B, 1917. (*See* No. 129, 1917 Bibliography.) A study of the stratigraphy and structure of the region, with conclusions as to prospective oil and gas areas, pointing out actual localities which show favorable structure.

**117.** Greene, F. C. A contribution to the geology of eastern Osage County. Bull. Am. Assoc. Petroleum Geol., vol. 2, 1918, pp. 118–122; discussion, pp. 122-123. A brief summary of the geology of this area, based on a study of outcrops and representative well logs.

**118.** Heald, K. C. Geologic structure of the northwestern part of the Pawhuska quadrangle, Oklahoma. U. S. Geol. Survey Bull. 691, 1918, pp. 57–100. Published also as separate Bull. 691–C, 1918. Gives stratigraphy and structure of the region and describes in detail the areas known to be productive. Suggestions are made as to the best localities for tests, and the possibility of accumulation below the present beds is discussed.

**119.** Heald, K. C. Structure and oil and gas resources of the Osage Reservation, Oklahoma. T. 25 N., R. 9 E. U. S. Geol. Survey Bull. 686–E, 1918. 15 pp.

**120.** ——— Structure and oil and gas resources of the Osage Reservation, Oklahoma. T. 27 N., R. 7 E. U. S. Geol. Survey Bull. 686–K, 1918. 7 pp.

**121.** Hopkins, O. B. Structure and oil and gas resources of the Osage Reservation, Oklahoma. T. 25 N., RS. 11 and 12 E. U. S. Geol. Survey Bull. 686–H, 1918. 16 pp.

**122.** Lloyd, E. R., and Mather, K. F. Structure and oil and gas resources of the Osage Reservation, Oklahoma. T. 20 N., R. 11 E. U. S. Geol. Survey Bull. 686–J, 1918. 9 pp.

**123.** Ohern, D. W. A contribution to the stratigraphy of the Red Beds. Bull. Am. Assoc. Petroleum Geol., vol. 2, 1918, pp. 114–117. A study of the Red Beds in the light of oil and gas possibilities.

**124.** Powers, Sidney. Age of the oil in southern Oklahoma fields. Trans. Am. Inst. Min. Eng., vol. 59, 1918, pp. 564–575; discussion, pp. 576–577. Published first in Bull. Am. Inst. Min. Eng., Nov., 1917, pp. 1971–1982; discussion, March, 1918, pp. 708–709; April, p. 842.

**124a.** Roark, Louis. Brief notes on field methods used in geological work of Mid-Continent oil fields. Proc. Indiana Acad. Sci., 1917 (Indianapolis, 1918), pp. 235–239. Describes briefly the following methods: Planetable and stadia traverse, using telescopic alidade; setting bench marks with plane table and stadia; using aneroid barometer with stationary barograph; setting bench marks with aneroid barometer; reconnaissance using aneroid barometer and hand level.

**125.** Stephenson, L. W. A contribution to the geology of northeastern Texas and southern Oklahoma. U. S. Geol. Survey Prof. Paper 120, 1918, pp. 129–163. Includes discussion of oil and gas prospects of this region. Published also as separate Prof. Paper 120–H, 1918.

**126.** White, David. Structure and oil and gas resources of the Osage Reservation Oklahoma. Introduction. U. S. Geol. Survey Bull. 686–A, 1918. pp. V–XII. Gives scope and plan of the work, the results of which are set forth in separate Bulletins, of examining the geologic structure of the Osage Reservation by townships, and of drawing from this study practical conclusions as to oil and gas prospects in this region. *See also* Nos. 110–112, 114, 115, 119–122, 127, 128.

**127.** Winchester, D. E. Structure and oil and gas resources of the Osage Reservation, Oklahoma. T. 27 N., R. 9 E. U. S. Geol. Survey Bull. 686–C, 1918, 5 pp.

**128.** Winchester, D. E., Heald, K. C. and others. Structure and oil and gas resources of the Osage Reservation, Oklahoma. T. 25 N., R. 10 E. U. S. Geol. Survey Bull. 686–G, 1918. 15 pp.

*See also* Nos. 85, 93, 95, 657.

### DEVELOPMENT AND PRODUCTION.

**129.** Elliott, A. R. Elevations of wells drilled for oil and gas in Osage County, Oklahoma. Revised to November, 1917. U. S. Bureau of Mines report, 1918. 56 pp. Mimeographed.

**130.** Oil Trade Journal. The future of the small operator in Oklahoma. Vol. 9, March, 1918, pp. 158–160, 163. Gives map of the State, on which ten zones are marked as productive areas and these are briefly described and discussed as to their probable future, particularly with reference to the small operator. Conclusion is that Oklahoma is not a favorable place for oil operations on a small scale.

*See also* Nos. 73, 106, 596, 614, 657, 672.

### TRANSPORTATION, STORAGE, AND DISTRIBUTION.

131. MORRISON, R. E. 113 miles of pipe line completed in record time despite adverse conditions. Am. Gas Eng. Jour., vol. 108, Feb. 2, 1918, pp. 97–99. Tells of the construction of a line from the Blackwell field, Oklahoma, by the Doherty interests. See also Nat. Gas and Gasoline Jour., vol. 12, Feb., 1918, pp. 53–54.

132. TUCKER, R. S. Tank fires and tank protection. Petroleum, vol. 5, Aug., 1918, pp. 35–36, 39, 112, 114. Discusses fire hazards and losses of the past year in Oklahoma fields, and protection devices, and emphasizes the importance of an agreement between underwriters, oil interests, laboratories and companies installing protective equipment as to standards and uniform rules for tank protection.

*See also* Nos. 136, 748.

STATISTICS, *see* Nos. 15–19, 22–41; DIRECTORIES, *see* No. 103a.

### LEGISLATION.

133. PETROLEUM. Legislation to prevent waste of oil and gas. Vol. 5, June, 1918, pp. 104, 107–110. Discussion of conservation laws and methods, with remedies suggested by Rice & Lyons, Tulsa, Oklahoma. Applied particularly to Oklahoma conditions. See also Oil and Gas Jour., vol. 16, May 16, 1918, pp. 42–45; May 23, pp. 44–45.

134. U. S. CONGRESS. SENATE. COMMITTEE ON INDIAN AFFAIRS. Hearings before Committee on Indian Affairs on H. R. 195—providing for the sale of coal and asphalt deposits on the segregated mineral land in the Choctaw and Chickasaw nations, Oklahoma, 1918. 65th Congress, 2nd sess. 64 pp.

135. ——— Report on sale of coal and asphalt deposits in segregated mineral land in the Choctaw and Chickasaw nations, January 18, 1918. 65th Congress, 2nd sess. 4 pp.

*See also* Nos. 31, 1701.

### MAPS.

136. CORPORATION COMMISSION OF OKLAHOMA. Oil map of Oklahoma. July 1, 1918. Shows pipe lines of the State and gives the following data: Names of pipeline companies in the State, with miles of trunk lines operated by each; names of refinery lines reported; number of refineries in Oklahoma and their total capacity per 24 hrs.; number of casing-head gasoline plants and their total capacity per 24 hrs.; carrying capacity per 24 hrs. of all transportation lines.

## TEXAS, EASTERN, CENTRAL, AND NORTHERN (111.34).

### HISTORY.

136a. GULF COAST OIL NEWS. History of North Texas fields—young but fast developing. March 30, 1918, pp. 36, 38. Gives history of development near Electra.

OCCURRENCE (ASPHALT), *see* No. 1.

### GEOLOGY AND ORIGIN.

136b. BEEDE, J. W. Further notes on the structure near Robert Lee, Coke County, Texas. Univ. Texas Bull. No. 1847, 1918, pp. 1–7.

137. BEEDE, J. W., AND WAITE, V. V. The geology of Runnels County. Bull. Univ. Texas, No. 1816, March 15, 1918. 64 pp. Includes description of surface structure and subsurface geology of a district where a well is being drilled and discusses the possibility of finding pay sands.

**138.** CHENEY, M. G. Economic importance of the Bend series in north central Texas as source of petroleum supply. Oil Trade Jour., vol. 9, April, 1918, pp. 109–110. Describes this series and discusses the probable production of petroleum from it. For structural map of this series, *see* Oil Trade Jour., vol. 9, May, 1918, p. 75.

**138a.** DUMBLE, E. T. The geology of east Texas. Bull. Univ. Texas No. 1869, Dec. 10, 1918. 388 pp. Contains chapter on petroleum and natural gas in east Texas.

**139.** HAGER, DORSEY. Geology of the oil fields of north central Texas. Bull. Am. Inst. Min. Eng., June, 1918, pp. 1109–1118; discussion, August, 1918, pp. 1155–1156, by W. E. Pratt. A review of the general geology of the region and detailed study of its structure with a view to finding conditions favorable for further development.

**140.** HAZLETT, A. J. Tremendous oil possibilities of great northwest Texas region, Oil Trade Jour., vol. 9, Feb., 1918, pp. 35–36, 38. Gives location of possible oil-bearing lands in this part of Texas, describing the formations to be found there.

**141.** HILL, R. T. Petroleum in the Texas Bend series. Oil Trade Jour., vol. 9, June, 1918, pp. 88–90.

**141a.** LIDDLE, R. A. The Marathon fold and its influence on petroleum accumulation. Bull. Univ. Texas, No. 1847, 1918, pp. 9–16. Gives brief geologic history of the region, and discusses petroleum possibilities.

**142.** MATSON, G. C., AND HOPKINS, O. B. The Corsicana oil and gas field, Texas. U. S. Geol. Survey Bull. 661, 1918, pp. 211–252. Published also as separate Bull. 661–F, 1917. Detailed results of an investigation undertaken in order "to give a more complete account of the history, production, and geology of this field than has yet been given, especially in regard to the types of structure present and the age and relations of the different sands." Analyses of the oil and gas are given, as well as statistics of production.

**143.** PHILLIPS, W. B. The Carboniferous (Pennsylvanian) in central Texas. Oil Trade Jour., vol. 9, July, 1918, pp. 91–92. Discusses briefly the area of the Carboniferous in this part of the State as it is at present known in the various counties involved.

**144.** SHULER, E. W. The geology of Dallas County. Bull. Univ. Texas, No. 1818, March 25, 1918. 54 pp. Includes, in section on economic products of the county, brief discussion of prospects for oil and gas.

**144a.** SOUTHWESTERN MINERAL RESOURCES. Oil in the Toyah Basin country. Vol. 2, Sept., 1918, p. 15. Quotes from paper by R. T. Hill (Jour. Franklin Inst., vol. 154, Aug., 1902, pp. 143–156; Sept., pp. 225–238; Oct., pp. 263–281) on geological structure of this region and the possibility of occurrence of petroleum in commercial quantities.

**144b.** SOUTHWESTERN MINERAL RESOURCES. Petroleum in Central Texas Pennsylvanian. Vol. 2, April, 1918, pp. 1–2, 16, 17. Reproduces map made in 1891 by N. F. Drake and gives Drake's description of the territory embraced in the map and its geology.

**144c.** TEXAS MINERAL RESOURCES. Oil, gas, and sulphur in Toyah Basin. Vol. 2, January, 1918, pp. 9–12. Brief account of the progress of oil exploitation in this region, its topography, and a theory of the origin of the flats which contain oil, gas, and sulphur.

**145.** WATTS, W. L. The oil fields of northeastern Texas. Min. and Oil Bull., vol. 4, Nov., 1918, pp. 525–527, 545–546, 550; vol. 5, Dec., pp. 15–17, 27–28; April, 1919, pp. 255–258, 269. General description of the Texas oil-yielding formations and brief descriptions of the individual fields.

**146.** Wrather, W. E. Geological significance of deep oil in north central Texas. Oil Trade Jour., vol. 9, March, 1918, pp. 122–123. Describes formations in which oil has been found in this locality and discusses the probable structure of the deeper beds.

*See also* No. 125.

### DEVELOPMENT AND PRODUCTION.

**147.** Doherty News. Front yard wells features of Brownwood, Tex., oil field. Vol. 3, March, 1918, pp. 14–15. Describes this shallow field and the drilling and production methods used there. *See also* Petroleum, vol. 4, April, 1918, p. 167.

**148.** Petroleum. Bright future ahead for new Ranger Texas field. Vol. 5, Sept., 1918, pp. 22–24. Describes general conditions in the field, including drilling costs, quality of the oil, etc.

**149.** Wrather, W. E. Comanche County well described in detail. Oil Trade Jour., vol., 9, Oct., 1918, pp. 10, 12. Description of the discovery well in what will probably be a new pool of importance.

*See also* Nos. 73, 106, 147.

### TRANSPORTATION, STORAGE, AND DISTRIBUTION.

**150.** Cole, E. D. Circular earth embankment lined with concrete forms oil reservoir. Eng. News-Rec., vol. 81, Nov. 21, 1918, pp. 932–934. Describes 350,000-barrel reservoir of Empire Pipe Co., at Gainesville, Tex.

**151.** Oil and Gas Journal. Pipe lines and refineries of Texas. Vol. 17, Nov. 29, 1918, p. 48. Mileage, size of lines, owners, location, year built, and capacity.

### PROPERTIES AND THEIR DETERMINATION.

**151a.** Schoch, E. P. Chemical analyses of Texas rocks and minerals. Bull. Univ. Texas No. 1814, 1918. 256 pp. Includes analyses of asphalt rock, lignite, natural gas, and grahamite.

*See also* Nos. 142, 148, 732.

### REFINING AND REFINERIES.

**152.** Oil and Gas Journal. Capacity of Texas oil refineries. Vol. 17, Nov. 8, 1918, p. 48. List of refineries in Texas, their locations, year built, and charging capacity.

### DIRECTORIES.

*See* No 103a.

### STATISTICS.

**153.** Oil Trade Journal. Texas and Louisiana output. Monthly statement.

*See also* Nos. 15–19, 22–41, 142, 151, 152.

## OTHER STATES (111.39).

### ARKANSAS.

### GEOLOGY AND ORIGIN.

**154.** Miser, H. D., and Purdue, A. H. Asphalt deposits and oil conditions in southwestern Arkansas. U. S. Geol. Survey Bull. 691, 1918, pp. 271–292. Published also as separate Bull. 691–J, 1918. Gives geography and geology of the region, and describes the asphalt deposits found there. Discusses the origin of the asphalt and the possibilities of finding oil and gas in commercial quantities. Gives well records.

Development and Production, *see No.* 154.

## MICHIGAN.

### OCCURRENCE, STATISTICS, DIRECTORIES OF PRODUCERS.

**155.** Michigan Geological and Biological Survey. Mineral resources of Michigan, with statistical tables of production and value of mineral products for 1917 and prior years. Publication 27. Lansing, 1918. 225 pp. Gives (pp. 185–186) occurrence of oil and gas; (pp. 191–192) production and value, 1913-1917; and (pp. 199, 202) directories of producers of oil and gas in Michigan in 1917.

Statistics, *see* Nos. 15–19, 22–41.

## MISSOURI.

### GEOLOGY AND ORIGIN.

**156.** Branson, E. B. Geology of Missouri. Univ. Missouri Bull., vol. 19, No. 15, May, 1918. 172 pp. Engineering Experiment Station series 19. Gives, after an outline of geologic principles in general, the general geology, topography, and structure of Missouri, its economic geology, and description of its minerals and rocks. Includes (pp. 138–144) section on the geology of oil and gas.

**157.** Wilson, M. E. Oil and gas possibilities in the Belton area. Missouri Bureau of Geology and Mines, 1918. 39 pp. Advance chapter from report in preparation on the oil and gas possibilities of the State. Gives, for an area of 71 square miles in Jackson and Cass Counties, its geography and topography, stratigraphy, and structure, and accounts of previous test drilling, with well records, concluding with recommendations for future drilling. Accompanied by structure map of the region.

## NEBRASKA.

Geology, *see* No. 94.

## GULF COAST FIELD (111.4).

### GEOLOGY AND ORIGIN.

**158.** Brokaw, A. D. An interpretation of the so-called paraffin dirt of the Gulf Coast oil fields. Bull. Am. Inst. Min. Eng., April, 1918, pp. 947–950; discussion, July, 1918, pp. 1148–1153, by W. E. Wrather and E. G. Woodruff; August, 1918, pp. 1158–1162, by Lee Hager; November, 1918, pp. 1674–1677, by W. G. Matteson; Jan., 1919, pp. 98–101, by E. W. Shaw. A study, based on laboratory investigations, of the composition and properties of paraffin dirt, with conclusion that it is a form of peat or peaty soil, and that the paraffin, if any exist in it, need have no relation to petroleum deposits.

**159.** De Goyler, E. Origin of the cap rock of the Gulf Coast salt domes. Econ. Geol., vol. 13, Dec., 1918, pp. 616–620. Presents the theory of deposition of the cap rock by precipitation from solution. Discussion suggested by paper of G. S. Rogers on the intrusive origin of the Gulf Coast salt domes, Econ. Geol., vol. 13, Sept., 1918, pp. 447–485. *See* No. 167.

**160.** ——— The theory of volcanic origin of salt domes. Bull. Am. Inst. Min. Eng., May, 1918, pp. 987–1000; discussion, July, 1918, p. 1147, by J. A. Udden; Oct., 1918, pp. 1629–1636, by E. T. Dumble. A review of the various theories of volcanic origin for salt domes and a discussion of the evidence of volcanic activity in salt dome regions and the supposed analogy to conditions in the Mexican oil fields. *See also* No. 162.

**161.** Deussen, Alexander. Review of developments in the Gulf Coast country in 1917. Bull. Am. Assoc. Petroleum Geol., vol. 2, 1918, pp. 16–36; discussion, pp. 36–37. An account of the more notable developments of geologic interest in Louisiana and Texas, particularly at New Iberia, Damon Mound, and Goose Creek. Includes maps, well logs, and other data.

**162.** DUMBLE, E. T. Origin of the Texas domes. Bull. Am. Inst. Min. Eng., Oct., 1918, pp. 1629–1636. Discussion of paper by E. L. De Goyler, "The theory of volcanic origin of salt domes," Bull. Am. Inst. Min. Eng., May, 1918, pp. 987–1000. (*See* No. 160.) Gives location and description of interior and coastal domes so far identified and discusses the origin of intrusives and the origin of the domes, which the author believes to be the result of orogenic action. Also in Oil Trade Jour., vol. 9, Nov., 1918, pp. 88, 90, 92.

**163.** HAWKINS, A. C. Minerals of the saline domes of the Texas-Louisiana Coastal Plain. Am. Mineral., vol. 3, Nov., 1918, pp. 189–192. Good description of the salt domes of this region.

**164.** JONES, W. F. Intrusive origin of the Gulf Coast salt domes. Its bearing on the accumulation of oil. Econ. Geol., vol. 13, Dec., 1918, pp. 621–622. Discussion suggested by paper of G. S. Rogers, on the intrusive origin of the Gulf Coast salt domes, Econ. Geol., vol. 13, Sept., 1918, pp. 447–485. *See* No. 167.

**165.** LUCAS, A. F. Possible existence of deep-seated oil deposits on the Gulf Coast. Bull. Am. Inst. Min. Eng., July, 1918, pp. 1119–1134; discussion, by G. S. Rogers, Oct., 1918, pp. 1558–1560. Presented as a discussion of the possibility of finding deep-seated oil deposits beneath the salt domes of Texas and Louisiana.

**166.** MATTESON, W. G. Principles and problems of oil prospecting in the Gulf Coast country. Bull. Am. Inst. Min. Eng., Feb., 1918, pp. 429–463; discussion, pp. 463–468, by A. F. Lucas; April, 1918, pp. 823–835, by A. F. Lucas, G. S. Rogers, E. W. Shaw, Eugene Coste, C. W. Washburne, and Kirby Thomas; July, 1918, pp. 1145–1146, by William Kennedy; August, 1918, pp. 1163–1164, by G. S. Rogers. Trans., vol. 59, 1918, pp. 435–469; discussion, pp. 469–491, 704–705. Gives history of the important oil pools of this region, its general topography and physiography, and its geology. Discusses methods of surveying and prospecting, the development and origin of the salt domes found there, the source of oil in the Gulf Coast pools, and the petrolific value of the salt domes in the Wold region.

**167.** ROGERS, G. S. Intrusive origin of the Gulf Coast salt domes. Econ. Geol., vol. 13, Sept., 1918, pp. 447–485. Discussed by W. F. Jones, pp. 621–622. Gives a résumé of salt-dome characteristics; discusses earlier theories of their origin, enumerating objections to them; summarizes the characteristics of domes in Mexico, Northwestern Europe, and Roumania; and explains the intrusive theory of origin. *See also* Nos. 159, 164.

**168.** THOMAS, KIRBY. Saline domes and other salt deposits. Min. and Sci. Press, vol. 117, Aug. 17, 1918, p. 226. Discusses the origin of the salt domes of the Gulf Coastal Plain.

**169.** VAUGHAN, T. W. Correlation of the Tertiary geologic formations of the Southeastern United States, Central America, and the West Indies. Jour. Wash. Acad. Sci., vol. 8, May 4, 1918, pp. 268–276. Tabular statements of the results of prolonged investigations of the stratigraphic equivalence of the Tertiary geologic formations of the South Atlantic and Gulf Coastal Plain of the United States, Mexico, Central America, and the West Indies.

## LOUISIANA, COASTAL (111.41).

HISTORY, *see* No. 171; OCCURRENCE (ASPHALT), *see* No. 1.

### GEOLOGY AND ORIGIN.

**170.** LUCAS, A. F. A review of the exploration at Belle Isle, Louisiana. Trans. Am. Inst. Min. Eng., vol. 57, 1918, pp. 1034–1046; discussion, pp. 1046–1049. Published first in Bull. Am. Inst. Min. Eng., Sept., 1917, pp. 1435–1447; discussion, Jan., 1918, pp. 88–92. Gives account of early and recent work of drilling wells to ascertain the extent of the salt and sulphur deposits of this island and sums up the present knowledge of the geology of the locality. Gives well logs showing oil, gas, salt, and sulphur.

*See also* Nos. 160, 161, 163, 165.

### DEVELOPMENT AND PRODUCTION.

**171.** Rickard, T. A. Anthony F. Lucas, and the Beaumont gusher. West. Eng., vol. 9, Jan., 1918, pp. 13–20. An interview with Capt. Lucas, giving incidents in the discovery and development of oil in coastal Louisiana and Texas. Includes explanation of special methods used in drilling and controlling the Spindle Top gusher.

*See also* No. 170.

### UTILIZATION.

**172.** Eggleston, Howard. Present situation relating to the introduction and use of natural gas in New Orleans. Proc. Louisiana Eng. Soc., vol. 4, Aug., 1918, pp. 153–156. Discusses possibilities of supplying New Orleans with gas from the Terrebonne gas field and the savings to be effected by substituting natural gas for fuel oil and coal in industrial and domestic uses.

*See also* No. 107a.

### STATISTICS.

**173.** Oil Trade Journal. Monthly statement of Gulf Coast drilling operations and Texas and Louisiana output.

*See also* Nos. 15–19, 22–41.

Legislation and Legal Regulation, *see* No. 1701.

## TEXAS, COASTAL AND SOUTHERN (111.42).

Occurrence (asphalt), *see* No. 1.

### HISTORY.

**173*a*.** Thomas, W. R. History of the coastal oil fields. Gulf Coast Oil News, No. 74, Mar. 9, 1918, pp. 17–21. Brief account of oil exploitation at Corsicana, Sour Lake, Saratoga, Batson, Humble, and Vinton.

*See also* No. 171.

### GEOLOGY AND ORIGIN.

**174.** Christner, D. D. and Wheeler, O. C. The geology of Terrell County. Bull. Univ. Texas, No. 1819, Apr. 1, 1918, pp. 1–30. Discusses oil possibilities and gives such informatuon as is available in regard to a well being drilled for oil in this county.

**175.** Hopkins, O. B. The Palestine salt dome, Anderson County, Texas. The Brenham salt dome, Washington and Austin counties, Texas. U. S. Geol. Survey Bull. 661, 1918, pp. 253–280. Published also as separate Bull. 661–G, 1917. States that the absence of oil and gas as surface seepages and in shallow wells in the Palestine dome detracts from the oil prospects of the locality; and that drilling for oil in the Brenham dome has been discouraged. Suggestions are made, however, for further drilling there.

**176.** Roberts, J. R. and Nash, J. P. The geology of Val Verde County. Bull. Univ. Texas, No. 1803, Jan. 10, 1918, 51 pp. Includes brief discussion of the possibility of finding oil in this region.

*See also* Nos. 160, 161, 162, 163, 165.

Development and Production, *see* No. 73; Transportation, Storage and Distribution, *see* No. 151; Refining and Refineries, *see* No. 152.

### STATISTICS.

**177.** Oil Trade Journal. Monthly statement of Gulf Coast drilling operations and Texas and Louisiana output.

*See also* Nos. 15–19, 22–41, 151, 152.

Directories, *see* No. 103a.

## ROCKY MOUNTAIN FIELD. (111.5)

### OCCURRENCE.

**178.** Mitchell, G. E. Billions of barrels of oil locked up in rocks. Nat. Geog. Mag., vol. 33, February, 1918, pp. 195–205. Also in Railroad Red Book, vol. 35, May, 1918, pp. 15–17, 19, 21, 22–23, 25. Am. Rev. of Rev., vol. 57, April, 1918, pp. 430–431. Review of oil-shale resources of the United States.

Statistics, *see* Nos. 15–19, 22–41.

## COLORADO (111.51).

### OCCURRENCE.

**179.** Adkinson, H. M. Colorado and Utah oil shale. Railroad Red Book, vol. 35, September, 1918, pp. 5–7, 9, 11, 13. Salt Lake Min. Rev. vol. 20, 1918, pp. 21–25. Reviews conditions of supply and demand of oil products, oil shale resources and possibilities, and the advantage of following the established methods of the Scotch industry.

**180.** Alderson, V. C. The oil shale industry. Colorado School of Mines Quarterly, vol. 13, No. 2, April, 1918. 30 pp. Railroad Red Book, vol. 35, April, 1918, pp. 15–24. General treatise.

**180*a*.** Coryell, P. C. Bituminous shales of Colorado. Mining American, vol. 77, Mar. 16, 1918, pp. 3–4. The author tells of his discovery of oil shale in Colorado. Discusses shale distillation in general.

**181.** Day, D. T. Oil shale possibilities, with some history. Salt Lake Min. Rev., vol. 19, Mar. 15, 1918, pp. 23–25. From paper before the Colorado Metal Mining Association and Colorado chapter of the American Mining Congress, Denver. Discusses possibilities of Colorado and Utah shales. Also in Railroad Red Book, vol. 35, Feb., 1918, pp. 17–23.

**182.** Oil and Gas Journal. Colorado, Utah and Nevada oil shales. Vol. 16, Mar. 28, 1918, pp. 38, 40, 42; Apr. 11, pp. 48–49, 54. Quotes report of J. B. Jones to the Petroleum Engineering Company, of Tulsa, Oklahoma. Gives review of present conditions in the fields of these States, comparisons with the Scotch industry, and results of tests made.

**183.** Wilcox, W. F. Mountains of oil in Colorado. Tractor and Gas Engine Rev., vol. 11, March, 1918, pp. 10–11, 62. A review of possibilities of the shale-oil industry in this State. Also in Sci. Am., vol. 119, July 13, 1918, p. 29.

### GEOLOGY AND ORIGIN.

**184.** Chase, R. L. The oil shale of Colorado. Min. and Sci. Press, vol. 116, March 30, 1918, pp. 445–446. Gives map showing the oil shale area in Colorado, describes mode of occurrence and properties of the shale, and discusses cost of mining and yield of products.

**185.** Hoskin, A. J. The oil-shale industry. West. Eng., vol. 9, May, 1918, pp. 191–198. General review of conditions on Colorado, Wyoming, Utah, and Nevada, giving the general location of the deposits, their mode of occurrence, and the varieties and characteristics of the shale. Explains the main features of distillation processes, including the Scotch method, the Chew process, the Galloupe process, and an adaptation of the Henderson method. Gives yields of distillation products from several samples of shale, costs of equipment and operation, and probable yield of by-products.

**186.** Ziegler, Victor. Colorado's future as an oil producer. Colorado School of Mines Quarterly, vol. 13, Oct., 1918, pp. 3–19. Article prepared for the public, untrained in geology, who wish to know the possibilities of finding oil in commercial quantities in Colorado. Calls attention to a number of general features regarding the occurrence and origin of oil, discusses the migration of oil and gas, and describes the formations of Colorado, pointing out possible oil horizons in the State.

*See also* No. 94.

Development and Production, *see* No. 184; Properties and their determination, *see* Nos. 184,185; Refining and refineries, *see* No. 185.

### STATISTICS.

**187.** Russell, W. C. Commercial possibilities of the oil-shale industry in Colorado. Railroad Red Book, vol. 35, Dec., 1918, pp. 15–18. Reviews conditions in Colorado, with figures for cost of production, net profits per ton, plant costs, and yield of oil and by-products.

*See also* Nos. 15–19, 22–41.

Legislation and Legal Regulation, *see* No. 1701.

## MONTANA (111.52).

### GEOLOGY AND ORIGIN.

**188.** Bowen, C. F. Anticlines in a part of the Musselshell Valley, Musselshell, Meagher, and Sweetgrass counties, Montana. U. S. Geol. Survey Bull. 691, 1918, pp. 185–209. Published also as separate Bull. 691–F, 1918. Describes arches and domes in which oil might possibly accumulate and points out favorable and unfavorable structures in this locality.

**189.** ——— Phosphatic oil shales near Dell and Dillon, Beaverhead County, Montana. U. S. Geol. Survey Bull. 661, 1918, pp. 315–320. Published also as separate Bull. 661–I, 1918. Gives stratigraphy and structure of the region and occurrence, properties, analyses, and distribution of the shale.

**190.** Collier, A. J. The Bowdoin Dome, Montana, a possible reservoir of oil or gas. U. S. Geol. Survey Bull. 661, 1918, pp. 193–209. Published also as separate Bull. 661–E, 1917. A study of the stratigraphy and structure of the dome, with the conclusion that a test for oil would be sufficiently warranted by the structure, the positions of possible sources of oil, and the actual discovery of a small flow of gas.

**191.** ——— Geology of northeastern Montana. U. S. Geol. Survey Prof. Paper 120–B, 1918. 23 pp. Detailed study of stratigraphy and structure.

**192.** Condit, D. D. Relations of late Paleozoic and early Mesozoic formations of southwestern Montana and adjacent parts of Wyomng. U. S. Geol. Survey Prof. Paper 120–F, 1918. 11 pp.

**193.** Hancock, E. T. Geology and oil and gas prospects of the Lake Basin field, Montana. U. S. Geol. Survey Bull. 691, 1918, pp. 101–147. Published also as separate Bull. 691–D, 1918.

**194.** Stebinger, Eugene. Oil and gas geology of the Birch Creek-Sun River area, northwestern Montana. U. S. Geol. Survey Bull. 691, 1918, pp. 149–184. Published also as separate Bull. 691–E, 1918, and in Press Bull. 404, April, 1919, p. 1. An optimistic outlook concerning the possibility of finding oil in this locality, where there are the same formations that produce oil in Wyoming and gas in Alberta.

*See also* No. 226.

Properties and Their Determination, *see* No. 189; Legislation and Legal Regulation, *see* No. 1701.

## UTAH (111.53).

### OCCURRENCE.

**195.** Oil and Gas Journal. Natural gas field north of Salt Lake. Vol. 16, May 23, 1918, p. 48. Quotes report of G. B. Richardson in Geol. Survey Bull. 260, 1905, pp. 480–483, on natural gas prospects in Utah.

**196.** Taylor, A. V. Oil and special hydrocarbons. Salt Lake Min. Rev., vol. 19, Jan. 15, 1918, pp. 25–26. Gives locations in Utah where investigation has been carried on or development attempted in the oil fields and brief reviews of conditions in the elaterite, tabbyite, gilsonite, ozokerite, and shale industries.

*See also* Nos. 1, 179, 180, 181, 182.

### GEOLOGY AND ORIGIN.

**197.** Camomile, L. E. Difference between oil-saturated sands and oil shales. Railroad Red Book, July, 1918, pp. 22–23, 25, 27. Describes the outcropping oil-saturated sand reefs of the San Rafael oil field, Utah, discusses the probable production to be obtained from this sand, and gives the main features and cost of the process to be employed.

**198.** ——— The oil-saturated sands of the San Rafael field, Utah. Railroad Red Book, vol. 35, May, 1918, pp. 26–27. Describes the sands and discusses their possibilities for the production of oil in commercial quantities.

**199.** Dake, C. L. The Valley City graben, Utah. Jour. Geol., vol. 26, Sept.–Oct., 1918, pp. 569–573. Describes structure: "A graben occupying an axial line of a well-defined anticline."

**200.** Emery, W. B. The Green River Desert Section, Utah. Am. Jour. Sci., 4th ser., vol. 46, Oct., 1918, pp. 551–577. Detailed study of the stratigraphy of the section made in an examination to determine the oil possibilities of the Green River Desert.

**201.** Grimes, O. J. Oil field in Utah is being developed. Oil and Gas Jour., vol. 17, June 21, 1918, pp. 45–46. Reviews development in the Virgin River field, Utah, and gives brief geological description of the field.

**202.** Kenner, Beauregard. Economic resources of the Sanpete Valley, Sanpete County, Utah. Railroad Red Book, vol. 35, April, 1918, pp. 26–32. Includes description of the oil-shale beds, physical properties of the shales, estimated shale area and tonnage, and a brief discussion of the possibilities of oil pools in the vicinity.

**203.** Silliman, B. J. Where the oil runs out of the rocks. Railroad Red Book, vol. 35, Aug., 1918, pp. 5–8. Description of Elaterite Basin as typical of the eastern part of the San Rafael oil field, Utah.

**204.** Winchester, D. E. Oil shale of the Uinta Basin, northeastern Utah, and results of dry distillation of miscellaneous shale samples. U. S. Geol. Survey Bull. 691, 1918, pp. 27–55. Published also as separate Bull. 691–B, 1918. Gives geology of the region, character of the shale, with results of distillation tests, properties and value of the shale obtained, and its probable origin. Results of dry distillation of samples from various States are appended.

*See also* No. 185.

Development and Production, *see* No. 197.

### PROPERTIES AND THEIR DETERMINATION.

**205.** Bardwell, Carlos, Berryman, B. A., Brighton, T. B., and Kuhre, K. D. Chemical properties of Utah hydrocarbons. Trans. Utah Acad. Sci., vol. 1, 1918, pp. 78–95. Mode of occurrence, physical and chemical properties, and uses of gilsonite, tabbyite, wurtzellite, ozokerite, and rock asphalt. Gives in tabular form (1) physical and chemical properties which may or may not depend upon the ultimate analysis; (2) the ultimate composition of these hydrocarbons; (3) solubility tests; (4) fractional distillation results.

*See also* Nos. 1, 185, 202, 204.

### REFINING AND REFINERIES.

**206.** Cummings, D. W. Processes and products of the Utah Refining Company. Salt Lake Min. Rev., vol. 20, Nov. 30, 1918, pp. 19–21.

207. Roeschlaub, H. M. Shale oil to be State's principal industry. Mining American, vol. 78, June 3, 1918, pp. 3-6. Salt Lake Min. Rev., vol. 20, June 15, 1918, pp. 25-28. Discusses the value of shale lands and the possible profits to be derived by working the shales on a commercial basis.

208. Wallace, G. W. Up-to-date shale oil plant. Petroleum Age, vol. 5, Oct., 1918, pp. 321-324. Description, with diagrams, by the inventor, of a plant now being erected by the Ute Oil Company near Watson, Utah, and a summary of data from retorting 60 samples of Utah shale from this locality.

*See also* No. 185.

Statistics, *see* Nos. 15–19, 22–41; Legislation and legal regulation, *see* Nos. 1697, 1701.

## WYOMING (111.54).

### OCCURRENCE.

209. Baker, L. G. Southwestern Wyoming's oil fields. Mining American, vol. 77, Feb. 2, 1918, pp. 3–4. History of development.

210. Petroleum. Naval reserves—what they are and where. Vol. 6, Nov., 1918, pp. 91–92, 94, 96. Description and full explanation of the United States naval reserves in California and Wyoming.

211. Western Oil World. Wyoming, past, present, and future. Vol. 1, Feb. 9, 1918, pp. 1–6. History of development and review of present conditions in Wyoming, by fields.

### GEOLOGY AND ORIGIN.

212. Blackwelder, Eliot. New geological formations in Western Wyoming. Jour. Wash. Acad. Sci., vol. 8, July 19, 1918, pp. 417–426. Describes new formations for which names have been adopted by the U. S. Geological Survey.

213. Bovee, G. G. Bibliography and index of Wyoming geology, 1823–1916. Wyoming Geol. Survey Bull. 17, 1918. 130 pp. Contains 721 references, arranged by years, with brief descriptive statements, and subject and author indexes.

214. Bowen, C. F. Stratigraphy of the Hanna Basin, Wyoming. U. S. Geol. Survey Prof. Paper 108, 1918, pp. 227–235. Published also as Prof. Paper 108–L, 1918.

215. Branson, E. B., and Greger, D. K. Amsden formation of the east slope of the Wind River Mountains of Wyoming and its fauna. Bull. Geol. Soc. Am., vol. 29, June 30, 1918, pp. 309–326. Includes age and distribution of the Amsden, a section and description of the formation, fossil horizons and locations, faunas and correlations, and descriptions of species.

216. Coulter, C. C. Geology of the Thornton oil field, Wyoming. Western Oil World, vol. 1, Feb. 9, 1918, p. 45. Describes formations found in this field.

217. ——— Deep-sand drilling versus shallow drilling. Western Oil World, vol. 1, Feb. 9, 1918, pp. 17–18. Geological observations showing the advantages of shallow sand territory over deep-sand territory in Wyoming, with brief review of conditions in several shallow fields and one deep-sand field as proof.

218. Dake, C. L. The Hart Mountain overthrust and associated structures in Park County, Wyoming. Jour. Geol., vol. 26, Jan.–Feb., 1918, pp. 45–55. Gives stratigraphy and structures of the region and describes this thrust in detail.

219. Knowlton, F. H. A fossil flora from the Frontier formation of southwestern Wyoming. U. S. Geol. Survey Prof. Paper 108, 1918, pp. 73–107. Includes description and discussion of the stratigraphic relations and age of the Frontier formation.

220. Moody, C. L., and Taliaferro, N. L. Anticlines near Sunshine, Park County, Wyoming. California University Department of Geology, Bull., vol. 10, No. 23, Jan. 31, 1918, pp. 445–459. Describes the area along the western edge of Bighorn Basin, giving its physiography and drainage, stratigraphy and structure and its geologic history. Includes a partial bibliography of the geology of the Bighorn Basin (p. 447).

221. Oil and Gas Journal. Wyoming's unique place in geology. Vol. 17, July 5, 1918, p. 46. Gives geologic column of the central fields of the State, with the localized names of the sands.

222. SCHUCHERT, CHARLES. Age of the American Morrison and East African Tendaguru formations. Geol. Soc. Am., vol. 29, June 30, 1918, pp. 245–280. Includes description and correlation of the Morrison and Sundance formations.

223. WEGEMANN, C. H. The Salt Creek oil field, Wyoming. U. S. Geol. Survey Bull. 670, 1918. 52 pp. After a brief history of the development of the field, gives its topography and detailed geology. Describes occurrence of oil in the various pools of the field, discusses its origin and accumulation, gives analyses of the oil, and estimates the future production of the field.

224. ———. Wasatch fossils in so-called Fort Union beds of the Powder River basin, Wyoming, and their bearing on the stratigraphy of the region. U. S. Geol. Survey Prof. Paper 108, 1918, pp. 57–60. Published first as Prof. Paper 108–D, 1917.

*See also* Nos. 94, 185, 192, 194, 225a.

DEVELOPMENT AND PRODUCTION, *see* No. 217; PROPERTIES AND THEIR DETERMINATION, *see* No. 185.

### REFINING AND REFINERIES.

225. DOWLING, D. B. Utilizing natural gas. Bull. Canadian Min. Inst., June, 1918, pp. 525–528. Describes gasoline absorption plant and carbon-black plant in Wyoming.

*See* No. 185.

STATISTICS, *see* Nos. 15–19, 22–41; LEGISLATION AND LEGAL REGULATION, *see* Nos. 55a, 1696, 1697, 1701.

## OTHER STATES (111.59).

### IDAHO.

#### GEOLOGY.

225a. SCHULTZ, A. R. A geologic reconnaissance for phosphate and coal in southeastern Idaho and western Wyoming. U. S. Geol. Survey Bull. 680, 1918. 84 pp. Includes (pp. 79–81) brief discussion of oil indications in this region.

### NEVADA.

#### GEOLOGY, PROPERTIES, AND REFINING.

*See* No. 185.

### NORTH DAKOTA.

#### GEOLOGY AND ORIGIN.

226. COLLIER, A. J. The Nesson anticline, Williams County, North Dakota. U. S. Geol. Survey Bull. 691, 1918, pp. 211–217. Published also as separate Bull. 691–G, 1918. Describes anticline near the crest of which an artesian well yields a small flow of gas, and discusses oil and gas possibilities in North Dakota and eastern Montana.

### SOUTH DAKOTA.

#### GEOLOGY AND ORIGIN.

227. EASTMAN, LE ROY. Development of oil and gas lands in Fall River County, South Dakota. Pahasapa Quarterly, vol. 7, Feb., 1918, pp. 84–85. Account of work done since 1903.

228. WARD, FREEMAN. The possibilities of oil and gas in Harding County, S. Dak. Circular No. 4, South Dakota State Geological and Natural History Survey, October, 1918. Reports favorable conditions and a reasonable chance for finding gas and possibly oil in this county. *See also* Petroleum Age, vol. 5, Dec., 1918, p. 395. Oil and Gas Jour., vol. 17, Nov. 29, 1918, p. 42. Oildom, vol. 10, Jan., 1919, p. 22.

*See also* No. 94.

## PACIFIC COAST FIELD. (111.6)

### UTILIZATION.

229. Western Engineering. Sources of power on the Pacific coast. Vol. 9, March, 1918, pp. 103–104. Discusses the present and future sources of power and their relative importance for industrial use. Diagrams show past, present, and probable future division of power supply, and sources of power, light, and heat in California in 1917.

*See also* No. 1667.

### CALIFORNIA (111.61).

### HISTORY AND OCCURRENCE.

230. Southern Pacific Company. In the United States District Court, Southern District of California, Northern Division. United States of America *vs.* Southern Pacific Company, et al. Defendants' statement of facts proven. March 1, 1918. 407 pp. Includes, in addition to a description of the lands involved in these suits, a historical narrative of the development of the Sunset and Midway, McKrittrick, and Coalinga districts as shown by the testimony, an account of the development of scientific and practical knowledge of oil in California, and a statement of the difficulty of geological problems involved in the region in the suit. *See also* Federal Reporter, vol. 249, June–Aug., 1918, pp. 785–805.

231. Standard Oil Bulletin. The birth of an industry. Vol. 6, Aug., 1918, pp. 5–9. An account of the discovery of oil in California, and a brief geologic description of the Pico, Wiley and Elsmere fields. Also in Nat. Gas and Gasoline Jour., vol. 12, Nov., 1918, pp. 397–400.

*See also* Nos. 1, 210.

### GEOLOGY AND ORIGIN.

232. Clark, B. L. Meganos group, a newly recognized division in the Eocene of California. Bull. Geol. Soc. Am., vol. 29, June 30, 1918, pp. 281–296. Includes description of the Meganos group north, south and west of Mount Diablo, and other occurrences of the Meganos in the Coalinga district and the Calabasis quadrangle, Ventura County.

233. ——— The San Lorenzo series of Middle California. Univ. California, Dept. of Geology Bull., vol. 11, No. 2, July 16, 1918, pp. 45–234. A stratigraphic and paleontologic study of the San Lorenzo Oligocene series of the region of Mount Diablo.

234. Clark, B. L., and Arnold, Ralph. Marine Oligocene of the West Coast of North America. Bull. Geol. Soc. Am., vol. 29, June 30, 1918, pp. 297–308. Abstract, Bull. Geol. Soc. Am., vol. 29, March, 1918, pp. 153–154. General survey of the known data on the paleogeography, climatic conditions, and faunal relationships of the Oligocene as found in California, Oregon, Washington, and Vancouver Island.

235. Dickerson, R. E. Proposed correlation of the Pacific and Atlantic Eocene. Bull. Geol. Soc. Am., vol. 29, March, 1918, pp. 148–149 (Abstract).

236. English, W. A. Geology and oil prospects of the Salinas Valley–Parkfield area, California. U. S. Geol. Survey Bull. 691, 1918, pp. 219–250. Published also as separate Bull. 691–H, 1918. Results of an investigation made partly to procure data for the classification of public lands, and partly to find areas favorable for prospecting. Gives stratigraphy and structure of the region, compares geologic conditions with those of adjacent productive areas, and describes areas believed to be worth testing.

237. Loel, W. F. Vaqueros formation in California. Bull. Geol. Soc. Am., vol. 29, March, 1918, p. 165 (Abstract).

*See also* Nos. 230, 231, 319, 676.

## DEVELOPMENT AND PRODUCTION.

**238.** Bush, R. D. Use of mud in abandoning. California Oil World, vol. 10, March 28, 1918, p. 2. Tells of the use of mud to protect oil sands from water when well was abandoned, and of the effectiveness of the process as shown by the increased production of other wells.

**239.** Collom, R. E. Comparison of various methods of excluding water from oil wells in California. California State Mining Bureau Bull. 84, 1918, pp. 110–195. Discusses the following items as they apply to operations for shutting off top or indeterminate waters in the oil fields of California: (1) Depth of hole; (2) the method of drilling; (3) diameter, weight and length of casing; (4) the method of making water shut-off; (5) such natural features as stratigraphic position, chemical composition and hydraulic head, or fluid level, of water; (6) record of all other formations entered.

**240.** Kirwan, M. J. Mudding process as Rancho La Brea. California Oil World, vol. 10, March 28, 1918, pp. 2–3. Describes operation of the process in detail and gives cross section showing underground structure in this area.

**241.** McGregor, G. Method of mudding wells as practiced in the Kern River field. California State Mining Bureau Bull. 82, 1918, pp. 87–90.

**242.** ——— A method of removing casing and plugging wells used in the Kern River field. California State Mining Bureau, Bull. 82, 1918, pp. 85–86.

**243.** McLaughlin, R. P. Reduction of water infiltration in oil wells. West. Eng., vol. 9, Apr., 1918, pp. 154–156. Describes methods used and results obtained in shutting off water in the Kern River field, California.

**244.** ——— Second annual report of the State oil and gas supervisor of California for the fiscal year 1916–17. California State Mining Bureau Bull. 82, 1918. 412 pp. Detailed account of the work of protecting the oil fields from damage by infiltrating water. Contains (pp. 66–81) text of the State law creating the department of petroleum and gas of the State Mining Bureau as amended in 1917.

**245.** ——— Third annual report of the State oil and gas supervisor of California for the fiscal year 1917–18. California State Mining Bureau Bull. 84, 1918. 617 pp. Detailed account of the work of protecting the California fields from water and other damage.

**246.** Mining and Oil Bulletin. Solving a complicated fishing job. Vol. 5, Dec., 1918, pp. 31–32, 35. Describes a comparatively inexpensive method of handling a complicated fishing job in the Montebello field, California.

**247.** Stalder, Walter. Increasing the production of oil in California. Min. and Sci. Press, vol. 116, Apr. 20, 1918, pp. 541–542. West. Eng., vol. 9, May, 1918, pp. 175–176. An optimistic view of the possibility of obtaining increased future production from fields yet to be discovered by means of wildcatting. Cites examples of important development which has resulted from this method of procedure.

**248.** Stout, H. A. Famous oil gushers. Pahasapa Quarterly, vol. 7, Feb., 1918, pp. 38–43. Describes gushers in Russia, Mexico, and California.

*See also* Nos. 73, 106, 230, 504, 594, 595, 613, 614, 676, 680.

## TRANSPORTATION.

**249.** Standard Oil Bulletin. The California oil pipe line. IV. Practical flow tests. V. Working flow curves. VI. Contamination. Vol. 5, Jan., 1918, pp. 7, 11–13; Feb., pp. 12–15; Mar., pp. 11–14. (For beginning of series, see Standard Oil Bulletin, Oct., Nov., and Dec., 1917.) Part IV describes methods used in testing the flow of oil in pipes, the obstacles encountered, and success finally achieved. Part V explains methods of arranging and coordinating data so that they may be available for estimating the flow in any proposed line. Part VI discusses the problems connected with the contamination which takes place when "batches" of different kinds of oil follow each other in pipes. Published also in pamphlet form by the Standard Oil Company of California, San Francisco, 1918. 20 pp.

### PROPERTIES AND THEIR DETERMINATION.

**250.** California Oil World. Navy specifications to rule quality of gasoline sold in Los Angeles. Vol. 10, Dec. 12, 1918, p. 1. Findings of investigating committee intended to serve as a basis for an ordinance regulating sales of gasoline.

**251.** Oil Age. Gasoline standard lowered. Vol. 14, Feb., 1918, pp. 31–32. Gives specifications adopted by the Los Angeles City Council covering the different products refined from crude petroleum.

**252.** Rogers, G. S. Relation of sulphur to variation in the gravity of California petroleum. Trans. Am. Inst. Min. Eng., vol. 57, 1918, pp. 989–1005; discussion, pp. 1005–1009. Published first in Bull. Am. Inst. Min. Eng., July, 1917, pp. 1023–1039; discussion, Oct., 1917, pp. 1862–1866. A study, based on investigations of California petroleum, of the chemical action of sulphur and oxygen on petroleum, of the intimate relation between the sulphur content of the oil from any one field and its gravity, and of the possibility that oil in its migration will encounter and take up sulphur or oxygen.

*See also* Nos. 1, 249.

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New Incorporations.

**261.** Oil Age. Monthly list of new companies.

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*See also* Nos. 55a, 230, 244, 595, 1701.

### MAPS.

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Map No. 1.—Sargent, Santa Clara County. Revised to Feb. 1, 1918.
Map No. 2.—Santa Maria, including Cat Canyon and Los Alamos. Revised to July 1, 1918.
Map No. 3.—Santa Maria, including Casmalia and Lompoc. Revised to July 1, 1918.
Map No. 4.—Whittier-Fullerton, including Olinda, Brea Canyon, Puente Hills, East Coyote, and Richfield. Revised to Apr. 15, 1919.
Map No. 5.—Whittier-Fullerton, including Whittier, West Coyote, and Montebello. Revised to Apr. 15, 1919.
Map No. 6.—Salt Lake, Los Angeles County. Revised to Sept. 20, 1918.
Map No. 7.—Sunset and San Emidio, Kern County. Revised to Nov. 18, 1918.
Map No. 8.—South Midway and Buena Vista Hills, Kern County. Revised to Dec. 1, 1918.
Map No. 9.—North Midway and McKittrick, Kern County. Revised to Nov. 18, 1918.
Map No. 10.—Belridge and McKittrick Front, Kern County. Revised to Nov. 18, 1918.

Map No. 11.—Lost Hills and North Belridge, Kern County. Revised to Dec. 1, 1918.
Map No. 12.—Devils Den, Kern County. Revised to Dec. 1, 1918.
Map No. 13.—Kern River, Kern County. Revised to Nov. 25, 1918.
Map No. 14.—Coalinga, Fresno County. Revised to Oct. 1, 1918.

## OREGON (111.62).

Occurrence and Properties (Asphalt), *see* No. 1; Geology, *see* No. 234; Legislation and legal regulation, *see* No. 1701.

## WASHINGTON (111.63).

### GEOLOGY AND ORIGIN.

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*See also* No. 234.

Properties, *see* No. 270; legislation and legal regulation, *see* No. 1701.

# MISCELLANEOUS (111.9).

## ALASKA (111.91).

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*See also* Nos. 273, 276.

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**332.** ——— Análisis efectuado en el Laboratorio del Instituto Geológico de México, de la muestra núm. 4, de petróleo crudo que remitió la Secretaria de Industria, Comercio y Trabajo, como perteneciente al campo de Furbero, pozo número 18, perteneciente a la Compañía "Oil Fields of Mex." Bol. Petróleo, vol. 5, March, 1918, pp. 244–245. Gives physical properties of the crude and properties of each fraction distilled.

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**334.** ——— Analisis verificado en el Laboratorio del Instituto Geológico de México, de la muestra de petróleo crudo enviada por la Secretaria de Industria, Comercio y Trabajo, como procedente del pozo Alamo 6 de la "Penn. Mex. Fuel Company." Bol. Petróleo, vol. 5, March, 1918, p. 245. Gives physical properties.

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Field Development.

**344.** Blardone, George. Mexico's petroleum production in 1917. Oil and Gas Jour., vol. 16, Jan. 24, 1918, pp. 28, 32. General review of field work and development during the year and of production in the various fields.

**345.** Boletin del Petróleo. Resumen de los trabajos de perforación de pozos ejecutados durante el año de 1917, en los campos petroliferos de Pais. Vol. 5, Feb. 1918, table facing p. 208. Gives data on wells drilled during the year, by companies.

**346.** Oildom. Complete Mexican official petroleum statistics. Vol. 8, Oct., 1918, p. 782. List of operating companies, with number of wells sunk by each, their depth, and potential daily production.

Imports.

**347.** U. S. Geological Survey. Mineral resources, pt. 2, Nonmetals. Annual statement of petroleum and petroleum products imported into Mexico from the United States.

Production.

**348.** Boletin del Petróleo. Producción de petróleo en México durante el año de 1917. Vol. 5, Feb., 1918, p. 203. Gives production, by months, in the Tampico, Tuxpan, and Minatitlan zones.

**349.** Boletin del Petróleo. Producción de petróleo en México durante el año de 1917, clasificada por compañías productoras y por meses. Vol. 5, March, 1918, pp. 309–319. Production, by months and by companies.

**350.** U. S. Geological Survey. Mineral Resources, pt. 2, nonmetals. Annual production statistics for petroleum, natural gas and asphalt.

## DIRECTORIES.

*See* No. 1723.

## LEGISLATION AND LEGAL REGULATIONS.

**350a.** Bureau of Foreign and Domestic Commerce. The Mexican oil situation Commerce Reports, No. 235, Oct. 7, 1918, pp. 84–89. Oil and Gas Jour., vol. 17, Oct. 25, 1918, pp. 48–49. Discusses oil legislation in Mexico, filing of manifests, export taxes, and prices, gives location of the Mexican oil fields, and describes briefly the oil in each district.

**350b.** Congreso Nacional de Industriales, Mexico. Proyecto de ley orgánica del artículo 27 constitucional en lo relativo a petróleo. Primer Congreso, Reseña y Memorias, 1918, pp. 324–341. Text of Article 27, of the new constitution, which nationalizes oil deposits of Mexico and, by heavily taxing foreign oil-exploiters, practically limits concessions to Mexican companies and individuals.

**350c.** Diario Oficial, Mérida (Yucatan). Reformas al reglamento de 14 de abril de 1917 para el cobro del impuesto del timbre al petróleo. Año 21, April 17, 1918, pp. 2425–2426. Revision of the regulation of April 14, 1917, concerning the collection of the stamp tax on petroleum.

**350d.** Diario Oficial (Mexico). Decree establishing tax on petroleum lands. Vol. 8, Feb. 27, 1918, pp. 611–612. This decree, dated February 19, 1918, was presented by President Carranza and declared to be in force from the date of its promulgation. Establishes tax on oil lands at $5 per hectare or less, and ten per cent of the production. Gives details for obtaining petroleum concessions.

**350e.** Diario Oficial (Mexico). Decreto reformando las prescripciones reglamentarias del artículo 14, del de 19 de febrero de 1918, reformado el 31 julio, relativo a los denuncios de fundos petrolíferos. Vol. 9, Aug. 12, 1918, pp. 959–960, 963–964. Amendment to the prescriptions regulating Art. 14, decree of Feb. 19, as amended July 31, 1918.

**350f.** Diario Oficial (Mexico). Decreto que prescribe la reglamentacion del artículo 14 del decreto de 19 de febrero de 1918. Vol. 9, July 13, 1918, p. 745. Modified regulations for obtaining petroleum concessions.

**351.** Fuller, E. D. Legal view of Mexican oil situation. Oil and Gas Jour., vol. 17, Sept. 27, 1918, pp. 46–47. Discusses the salient features of the decrees of the Mexican government affecting the petroleum industry in Mexico and analyzes the situation from a legal viewpoint.

**352.** ——— Question of Mexican oil lands tax. Oil and Gas Jour., vol. 17, June 28, 1918, pp. 35–36. A review of the situation from a legal standpoint.

**352a.** Ipiña, Roberto, and Mendez, C. F. Varias medidas propuestas por los delegados quienes representaban la industria petrolera de San Luis Potosi, para que se tengan en cuenta al reglamentar el artículo 27 de la Constitución. Congreso Nacional de Industriales, Primer, Reseña y Memorias, 1918, pp. 307–311. Considers the provisions of Art. 27 of the new constitution concerning the petroleum industry, and recommends certain amendments.

**353.** Jiménez, C. P. Estudio comparativo del impuesto al petróleo en el Perú y en México. Informaciones y Memorias de la Sociedad de Ingenieros del Perú, vol. 20, April, 1918, pp. 144–150.

**353a.** Mendoza, Salvador. El dominio directo de los minerales y el petróleo según la Constitucion de 1917. Congreso Nacional de Industriales, Primer, Reseña y Memorias, 1918, pp. 122–130. Reviews the history of petroleum legislation in Mexico, and advocates state ownership of all mineral deposits and petroleum.

**354.** Oil and Gas Journal. Petroleum industry is regulated. Vol. 17, Aug. 9, 1918, pp. 34, 36. Petroleum World, vol. 15, Sept., 1918, pp. 390–392; Oct., p. 436. Translation of proclamation issued by President Carranza, of Mexico, July 18, 1918, containing new orders governing petroleum claims.

**355.** President Carranza's sweeping decree. Vol. 16, March 21, 1918, pp. 46, 50; Oil Trade Jour., vol. 9, April, 1918, pp. 84, 86–87. Translation of decree covering the taxation of oil lands, rentals, royalties, etc.

**356.** Santaella, Joaquin. El derecho sobre el petróleo. Apuntes historicos. Bol. Petróleo, vol. 6, Dec., 1918, pp. 531–543.

**357.** ——— El impuesto sobre terrenos y contratos petroleros. Bol. Petróleo, vol. 5, May, 1918, pp. 445–449.

**358.** Schiaffino, J. V. Estudio acerca de la conveniencia de reducir el Impuesto de Barra para los productos derivados del petróleo crudo, a diez centavos por tonelada. Bol. Petróleo, vol. 5, June, 1918, pp. 557–568.

**359.** Secretaria de Industria, Comercio y Trabajo. Proyecto de ley del Petróleo estudiado en el Departamento de Petróleo por los ingenieros J. V. Schiaffino, Joaquin Santaella, Raul Landázuri, y Alberto Langarica, y enviado a la Sección del

Petróleo del Primer Congreso Nacional de Industriales para que emitiera su opinión. Oficina Impresora de la Secretaría de Hacienda, Departamento de Fomento, 1918. 35 pp.

### MISCELLANEOUS.

**360**. Urbina, Fernando. Bosquejo de un programa general para el estudio del petróleo en nuestro país. Bol. Petróleo, vol. 6, July, 1918, pp. 54–60. A plan for the study of Mexican petroleum, including the gathering of statistics, collection of books and bibliographic material, collection of samples and models for a museum, geologic study, study of transportation methods and economics and the publication of reports of public interest.

## CENTRAL AMERICA (114).

### GEOLOGY.

**361**. Vaughan, T. W. Geologic history of Central America and the West Indies during Cenozoic time. Bull. Geol. Soc. Am., vol. 29, Dec. 30, 1918, pp. 615–630.

*See also* Nos. 169, 320.

### STATISTICS.

**362**. U. S. Geological Survey. Mineral Resources, pt. 2, nonmetals. Annual production statistics for petroleum, natural gas, and asphalt.

## WEST INDIES (115).

Geology, *see* Nos. 169, 320, 361.

### STATISTICS.

**363**. U. S. Geological Survey. Mineral resources, pt. 2, nonmetals. Annual production of petroleum and asphalt in the West Indies.

### BARBADOS (115.1).

Occurrence and Properties (Manjack), *see* No. 1.

### GEOLOGY AND ORIGIN.

**364**. Cunningham-Craig, E. H. The prospective oil fields of Barbados. Jour. Inst. Petroleum Technologists, vol. 4, Feb., 1918, pp. 68–78; discussion, April, 1918, pp. 107–109, by I. A. Stigand. Petroleum World, vol. 15, Jan., 1918, pp. 12–15 (abstract). Describes some of the less obvious geologic features of the island and considers the island in connection with phenomena of earth movement, etc., as shown in the region in which it is situated. Describes development work already done and considers future prospects. For bibliography to accompany this paper, see Jour. Inst. Petroleum Technologists, vol. 4, Dec., 1917, pp. 63–64. Bureau of Mines, Petroleum bibliography for 1917, Item No. 298.

Statistics, *see* No. 363.

### CUBA (115.2).

### OCCURRENCE.

**364a**. Montoulieu, E. I. The mining industry of the Republic of Cuba. Cuba Review, (New York), vol. 16, Nov., 1918, pp. 12–26. Gives locations of oil occurrences in Cuba.

Occurrence and Properties (Asphalt), *see* No. 1.

## GEOLOGY AND ORIGIN.

364b. Brodermann, Jorge. Cuba, pais eminentemente petrolífero. Heraldo Minero, (Havana). Extraord. Num., May 20, 1918, pp. 14–15. Discusses possibility of finding oil in paying quantities in Cuba, and gives localities in which favorable geologic conditions exist.

364c. Brodermann, Jorge. Los yacimientos petrolíferos al sur de la sierra "El Rosario" en la Provincia de Pinar del Rio. Fomento, (Habana), año 1, vol. 1, January, 1918, pp. 192–196. States that it will require some years of study to determine the succession of formations and areal geology of this province, and that all the indications show an important oil zone in this region.

364d. Brodermann, Jorge and Medley E. Reconocimiento petrolífero en la Provincia de Santa Clara. Fomento, (Habana), año 1, vol. 1, March and April, 1918, pp. 255–258. Gives location of favorable bituminous indications in this province.

365. De Golyer, E. The geology of Cuban petroleum deposits. Bull. Am. Assoc. Petroleum Geologists, vol. 2, 1918, pp. 133–167. Gives stratigraphy, structure, and a detailed description of petroleum and asphalt occurrences by provinces and an account of drilling operations in the various provinces. Closes with brief discussion of the occurrence and origin of the oil.

365a. Lafórque, Enrique. El petróleo en la Isla de Cuba. Fomento, (Habana) año 1, vol. 1, Feb., 1918, pp. 222–224. Geologic study.

366. Ortega, Pablo. Geology of Cuba. A reprint of the chapters on physiography and general geology from the "Report on a Geological Reconnaissance of Cuba," by C. W. Hayes, T. W. Vaughan, and A. C. Spencer, 1901. Partly revised by the author above. Havana, March, 1918. 37 pp. maps.

367. ——— El petróleo en Cuba. Revista de la Sociedad Cubana de Ingenieros, vol. 10, Dec., 1918, pp. 700–705.

367a. Petroleo. El progreso de la industria petrolera el la Isla de Cuba. Vol. 9, Feb., 1918, pp. 8–9. Discusses present state of development of the oil industry.

## DEVELOPMENT AND PRODUCTION.

367b. Brodermann, Jorge. Primeras perforaciones en busca de petróleo en la Sierra del Rosario en la Provincia de Pinar del Rio. Fomento, (Habana) año 1, vol. 1, May and June, 1918, pp. 288–293. A description of the first borings in search of petroleum made by the Pinar del Rio Mining Co. and the Bacuranao Mining Co. in the Province of Pinar del Rio.

## PROPERTIES AND THEIR DETERMINATION.

367c. Boletin de Minas, (Havana, Cuba). Análisis de minerales. January, 1918, pp. 84–86. Gives analyses of petroleum and asphalt from different localities in Cuba.

367d. Boletin de Minas, (Havana, Cuba). Reseña sobre la mineria durante el año 1917. January, 1918, pp. 1–12. Gives list of petroleum companies and prospects in the provinces of Habana and Matanzas, and an analysis of oil. Gives description of the natural gas of the Motembo mines of San Juan in Santa Clara province.

Statistics. *See* No. 363.

## TRINIDAD (115.3).

Occurrence and Properties (Asphalt), *see* No. 1, Statistics; *see* No. 363.

## OTHER ISLANDS (115.9.)

### PORTO RICO.

### STATISTICS.

368. U. S. Bureau of Foreign and Domestic Commerce. Monthly summary of foreign commerce of the United States gives quantity and value of crude and refined mineral oils shipped to Porto Rico.

### SANTO DOMINGO.

### OCCURRENCE.

368a. Schoenrich, Otto. Santo Domingo—a country with a future. New York, Macmillan Company, 1918. 418 pp. Discusses petroleum possibilities, pp. 140–141.

## SOUTH AMERICA (120).

### OCCURRENCE.

369. Clapp, F. G. Review of present knowledge regarding the petroleum resources of South America. Trans. Am. Inst. Min. Eng., vol. 57, 1918, pp. 914–966; discussion, pp. 966–967. Published first in Bull. Am. Inst. Min. Eng., Oct., 1917, pp. 1739–1791; discussion, Jan., 1918, pp. 101–102, Oil and Gas Jour., vol. 16; Jan. 10, 1918, pp. 38–39; Jan. 17, pp. 44–45; Jan. 24, p. 38; Jan. 31, pp. 38, 40; Feb. 21, pp. 38–39; Mar. 7, pp. 44–45, 50; Mar. 14, pp. 43–44; Mar. 21, pp. 44–45; Mar. 28, pp. 46, 50. After general considerations as to the geographic distribution of petroleum in South America, geological conditions, and the quality of the oil, data are given on the distribution, geological conditions, quality, and production (statistics) in the following countries: Peru, Argentina, Venezuela, Colombia, Ecuador, Brazil, Chile, Bolivia, The Guianas, and the Falkland Islands.

370. Reid, W. A. La explotacion del petróleo en la America Latina. Boletin de Minas, Industrias y Construcciones, Lima, ser. 2, vol. 10, June, 1918, pp. 83–95.

371. Reid, W. A. Glances at petroleum development in Latin America. Bull. Pan American Union, vol. 46, Jan., 1918, pp. 49–65. Gives location of oil fields, general conditions, and statistics of production for the following countries: Mexico, Peru, Argentina, Venezuela, Colombia, Ecuador, Bolivia, and Cuba; and discusses prospects in Chile and Brazil.

### GEOLOGY.

372. Berry, E. W. Age of certain plant-bearing beds and associated marine formations in South America. Bull. Geol. Soc. Am., vol. 29, Dec. 30, 1918, pp. 637–648. Discussion centered on the Pre-Pliocene Tertiary of the Andean region of the west coast. Includes Canal Zone, Colombia, Ecuador, Peru, Chile.

*See also* No. 369.

Properties, *see* No. 369.

### STATISTICS.

Production.

373. U. S. Geological Survey. Mineral Resources, pt. 2, nonmetals. Gives annual production figures for principal producing countries.

## ARGENTINA (121).

### OCCURRENCE.

374. Herold, S. C. The economic and geologic conditions pertaining to the occurrence of oil in the north Argentine-Bolivian field of South America. Bull. Am. Inst. Min. Eng., Sept., 1918, pp. 1503–1522. Discussion, April, 1919, pp. 718–719, by Eugene Coste and Mowry Bates. May, 1919, p. 854, by D. B. Dowling. Discusses the following subjects in regard to this region: Topography, climate, inhabitants and industries, timber, approach and accessibility, oil seepages, development, geological conditions.

*See also* Nos. 369, 370, 371.

GEOLOGY, *see* Nos. 369, 374, DEVELOPMENT AND PRODUCTION, *see* No. 369, 374; PROPERTIES, *see* No. 369; STATISTICS, *see* Nos. 369, 371, 373.

## PERU (122).

### OCCURRENCE.

**375.** JIMÉNEZ, C. P. El gas natural y sus derivados. Informaciones y Memorias de la Sociedad de Ingerieros del Perú, vol. 20, November, 1918, pp. 484–489. Potential wealth of Peru.

*See also* Nos. 369, 370, 371.

GEOLOGY, *see* Nos. 369, 372.

### PROPERTIES AND THEIR DETERMINATION.

**376.** DEUSTUA, R. A. Los petróleos peruanos. Lima, Imprenta Sanmarti y Cia., 1918. 34 pp. Properties of Peruvian oils.

*See also* No. 369.

### STATISTICS.

FIELD DEVELOPMENT AND PRODUCTION.

**377.** PERU. Cuerpo de Ingenieros de Minas. Boletins. Contain statistics of oil production, drilling, etc.

**378.** JIMÉNEZ, C. P. Estadistica minera del Perú en 1917. Boletin del Cuerpo de Ingenieros de Minas del Perú, No. 95, 1918. 326 pp. Includes statistics on oil.

**379.** ——— Estado actual de la industria minera en el Perú. Informaciones y Memorias de la Sociedad de Ingenieros del Perú, vol. 20, Aug., 1918, pp. 387–397. Statistical, including production figures for petroleum in Peru for 1916 and 1917.

*See also* Nos. 369, 373.

LEGISLATION AND LEGAL REGULATION, *see* No. 353.

## OTHER COUNTRIES (129).

### BOLIVIA.

#### GEOLOGY.

**379a.** KOZLOWSKI, ROMAN. Informe sobre una execursión geológica de la región petrolífera de Pacajes, realizada entre el 6 y el 16 de Agosto de 1914. Boletin de la Dirección Nacional de Estadistica, Bolivia, año 1, March and April, 1918, pp. 30–39. Describes the general aspect and geological structure of the region, the indications of petroleum, and the conditions which produced them.

### BRAZIL.

#### OCCURRENCE AND REFINING.

**379b.** BRAZIL-FERRO-CARRIL (Rio de Janeiro). Industrias extractivas petróleo. Anno 9, Mar. 1, 1918, pp. 130–131. Gives list of by-products obtained from Alagoas oil shale, and location of newly found indications of oil in the State of San Paulo.

#### GEOLOGY AND PROPERTIES.

**379c.** BACH, JOSÉ. A riqueza petrolífera alagoana. Brazil-Ferro-Carril (Rio de Janeiro), Anno 9, Aug. 1, 1918, p. 370; Sept. 1, p. 429; Sept. 16, p. 447. A report of Dr. Bach's investigations on the oil deposits of Alagoas. Describes the oil zones, the geology, the petroleum, bitumen and naphtha, and other bituminous deposits, and showings of oil obtained from shallow depths of 6 to 7 meters. Gives calorific value of the oil.

## BRITISH GUIANA.

### OCCURRENCE.

**379d.** Gulf Coast Oil News. Drill points out possible oil-bearing districts in British Guiana. Feb. 16, 1918, pp. 23–24. Describes general conditions in the Pomeron and Northwest districts where there are showings of gas and asphalt.

## CHILE.

Occurrence, Geology, Properties, Statistics, *see* Nos. 369, 371, 372, 373.

### UTILIZATION.

**380.** Ossa, B. D. A national liquid fuel. Boletin de la Sociedad de Fomento Fabril, vol. 35, 1918, pp. 41–43. Describes a fuel invented in Chile as substitute for gasoline, called "E–H–A," composed of ether, alcohol, and benzine.

## COLOMBIA.

### OCCURRENCE.

**381.** California Oil World. Colombian oil prospects, big refinery, as seen at Panama. Vol. 10, Dec. 5, 1918, p. 1. Résumé of a report in a Panama journal on Colombian oil fields, giving location of the fields, properties of the oil, and future prospects.

**382.** Plotts, William. Colombia, a coming oil region. California Oil World, vol. 10, Mar. 28, 1918, p. 5; Oil and Gas Jour., vol. 16, Apr. 18, 1918, p. 48. Describes occurrences in this country and the general conditions and difficulties to be met in developing an industry there.

*See also* Nos. 1, 369, 371.

Geology, *see* Nos. 369, 372; Properties, statistics, *see* Nos. 1, 369, 371, 373, 381.

## VENEZUELA.

Occurrence and Properties, *see* Nos. 1, 369, 371; Geology, *see* No. 369; Properties (asphalt), *see* No. 1.

### STATISTICS.

Exports.

**383.** U. S. Geological Survey. Mineral resources, pt. 2, non-metals. Gives annual exports of asphalt from Venezuela.

*See also* Nos. 369, 371, 373.

## EUROPE (130).

Occurrence (Asphalt and Bitumen), *see* Nos. 1, 925; Geology, *see* No. 167; Utilization, *see* No. 1592.

### STATISTICS.

Production.

**384.** U. S. Geological Survey. Mineral resources, pt. 2, non-metals. Annual statistics for principal producing countries.

## AUSTRIA-HUNGARY (131).

Occurrence (Ozokerite), *see* No. 1; Development and Production, *see* No. 73; Properties, *see* No. 924; Statistics, *see* No. 384.

## FRANCE (132).

Occurrence (Asphalt and Asphaltic Sand), *see* No. 1.

### GEOLOGY AND ORIGIN.

**385.** PRUVOST, PIERRE. Les poissons fossiles du terrain houiller du nord de la France. Compt. rend., t. 167, Dec. 23, 1918, pp. 1041–1043. A study of the fish fossils which are found in bituminous shales overlying certain coal veins in the northern part of France.

### REFINING AND REFINERIES.

**386.** GUISELIN, A. Les combustibles liquides. Bull. Soc. Ing. Civiles de France. 71 année, Oct., 1918, pp. 453–548. A study of the possible ways of increasing the output of liquid fuels in France. Includes sections on the production of oils from bituminous shales, coal tar, coal waste, lignite, peat, etc., and on the use of alcohol as fuel.

### UTILIZATION.

**387.** BÉRENGER, HENRI. France and the use of petroleum. Petroleum Rev., vol. 38, June 29, 1918, pp. 405–406; vol. 39, July 6, 1918, pp. 11–12; July 13, pp. 27–28. Translated from "Colonies et Marine." Reviews the advantages of liquid fuel in industrial engines and engines for motive power, and emphasizes the necessity for increased importation and consumption of liquid fuel by France, as well as the study and exploitation of her own resources in that line.

**388.** BRADLEY, W. F. France decides to market alcohol. Automotive Industries, vol. 38, March 28, 1918, p. 656. Discusses the possibilities of using the large quantities of alcohol and benzol to be available in France after the war in a motor fuel mixture.

**389.** ———. France stages kerosene contest. Motor Age, vol. 34, Oct. 24, 1918, pp. 30–31. Tells of competition organized to encourage the use of kerosene in motor cars and trucks, and describes the prize-winning system, the Bellem kerosene pulverizer.

*See also* Nos. 386, 1272, 1314.

## GERMANY (133).

OCCURRENCE (MONTAN WAX, ASPHALTIC LIMESTONE), *see* No. 1; REFINING AND REFINERIES, *see* No. 403.

### UTILIZATION.

**390.** LEFRANC, J. A. L'evolution de l'aviation Allemande. II. Les moteurs. La Nature, t. 46, Mar. 16, 1918, pp. 161–170. Includes development of carburetors.

*See also* No. 403.

STATISTICS, *see* No. 384.

## GREAT BRITAIN (134).

### OCCURRENCE AND GENERAL REVIEW.

**391.** BESSEMER MONTHLY. How Scottish oil shale industry came to aid of Great Britain in year 1916. Jan., 1918, pp. 12, 14. Gives location of the Scotch oil-shale fields, the physical characteristics of the shale, and the marketable products usually obtained from it. Gives estimated production figures for 1916.

**392.** BEVAN, T. H. Scotch shale oil. Petroleum World, vol. 15, March, 1918, p. 115. Gives location of the beds, physical characteristics of the shale, and the products obtained by distillation.

**393.** CUNNINGHAM-CRAIG, E. H. Oil-producing deposits of the British Empire. Petroleum Rev., vol. 38, June 15, 1918, pp. 373–374; June 22, p. 391. Reprinted from the Journal of the Royal Colonial Institute. In order to call attention to the untouched sources of mineral oils by distillation in the Empire, a brief review is given of the occurrence and important characteristics of known deposits of retortable material in Canada, Australia, New Zealand, and Africa.

**394.** GREAT BRITAIN. THE WAR CABINET. Report for the year 1917. London, 1918. 236 pp. Contains section (pp. 135–138) on the status of the petroleum industry in Great Britain during 1917.

**395.** REDWOOD, BOVERTON. The romance of petroleum. Petroleum World, vol. 15, June, 1918, pp. 229–233. Petroleum Rev., vol. 38, June 8, 1918, p. 359; June 15, pp. 379–380. From paper before the Royal Institute of Great Britain, June 7, 1918. General discourse on the petroleum industry, particularly in the British Empire.

**396.** SOCIETY OF CHEMICAL INDUSTRY, JOURNAL. The Scottish mineral oil industry. Vol. 37, Dec. 31, 1918, pp. 467R–468R. The present status and future possibilities of the oil-shale industry in Scotland are discussed.

**397.** STRAHAN, A. Special reports on the mineral resources of Great Britain. Vol. VII. Lignite, jets, Kimmeridge oil-shale, mineral oil, cannel coals, natural gas. Part I.—England and Wales. Mem. Geol. Survey, 1918. 69 pp. Chapter II, on Kimmeridge oil-shales (pp. 24–40) gives their general distribution, uses and values, with analyses of several samples, and descriptions of occurrences in various localities. Chapter III (pp. 41–45) gives an account of attempted development of mineral oil deposits and description of known occurrences. Chapter V (pp. 59–63) describes occurrences of natural gas.

*See also* No. 1.

### GEOLOGY.

**397a.** EVANS, J. W. Geology of the British Isles. The Hague, M. Nijhoff, 1918. 354 pp.

**397b.** GREAT BRITAIN. GEOLOGICAL SURVEY. Summary of progress of the Geological Survey of Great Britain and the Museum of Practical Geology for 1917. London, 1918. 55 pp. Appendix III. On a deep boring for coal at Kelham, Nottinghamshire, pp. 48–50. Section shows sandstone yielding oil. In report on field work for the revision of map of the central coal field of Scotland, mention is made of seams of the Lothian shales and carboniferous limestone rock.

*See also* No. 397.

### DEVELOPMENT AND PRODUCTION.

**398.** PETROLEUM WORLD. Drilling the first oil well in England. Vol. 15, Nov., 1918, pp. 450–458. History of the events of the four years preceding the drilling of the well and description of the spudding-in ceremony.

PROPERTIES, *see* Nos. 10a, 391, 392, 397.

### REFINING AND REFINERIES.

**399–402.** CUNNINGHAM-CRAIG, E. H., PERKIN, F. M., BERRY, A. G. V., AND DUNSTAN, A. E. A new British oil industry. Jour. Inst. Petroleum Tech., vol. 4, April, 1918, pp. 110–134; discussion, pp. 134–157. Petroleum Rev., vol. 38, Feb. 23, 1918, pp. 117–118; March 2, pp. 139–140; March 9, pp. 155–156; March 16, p. 167; March 23, pp. 189–190. In three parts. Cunningham-Craig discusses low-temperature carbonization of cannel coals, torbanites, and ironstones for the production of oil and by-products, using the experience of the shale-oil industry of Scotland as a foundation for the new industry. (Abstract in Jour. Soc. Chem. Ind., vol. 37, March 15, 1918, pp. 93R–94R. Engineering, vol. 105, March 1, 1918, pp. 232–233. *See also* Colliery Guard., vol. 115, Feb. 22, 1918, p. 377. Petroleum World, vol. 15, March, 1918, pp. 98–99.) Perkin considers the yields of different products from coals and cannels by high and low temperature carbonization. Berry and Dunstan discuss methods of sampling cannel coal and of testing it for its oil content, and describe its distillation products.

**403**. Grempe, P. M. Production and use of shale oils. Seifenfabr, Jahrg. 38, 1918, pp. 597–598. Chem. Abs., vol. 13, July 10, 1919, pp. 1527–1528. History, production, and use of shale oil in Germany and Scotland.

**404**. Petroleum Review. Wanted: A new fuel oil. Vol. 38, April 13, 1918, p. 229; Gas Rec., vol. 13, May 22, 1918, pp. 325–326. Gives requirements of a fuel oil for which the British Government is to pay an award, to be obtained by the admixture of dehydrated coal tar with mineral oils.

**405**. Petroleum World. Full interim report of technologists' committee on home oil. Vol. 15, Aug., 1918, pp. 342–344; Petroleum Rev., vol. 39, Aug. 10, 1918. p. 87; Jour. Soc. Chem. Ind., vol. 37, Aug. 31, 1918, p. 326R; Gas Jour., vol. 143, Aug. 13, 1918, p. 300. Report of committee appointed by the Institution of Petroleum Technologists, London, to "obtain evidence in respect of the quantity of cannel coal and allied minerals available in Great Britain as a source of motor spirit, fuel oil, or other products, and to formulate a scheme for the utilization of such supplies."

**406**. ———. Full report of Lord Crewe's committee on the production of fuel oil from home resources. Vol. 15, Aug., 1918, p. 348; Sept., pp. 368–370; Jour. Soc. Chem. Ind., vol. 37, Aug. 31, 1918, p. 325R; Gas Jour., vol. 143, Aug. 6, 1918, pp. 258–260; Chem. News, vol. 117, Aug. 16, 1918, pp. 275–276. Report of committee appointed by the Minister of Munitions "to consider the report which has been rendered by the Petroleum Research Department on the production of fuel oil from home sources, and to advise to what extent and within what time it should be possible under present conditions to carry out the proposals made in this report; and to consider the steps which have been taken by the Ministry of Munitions in this connection." Conclusion (summarized also in Petroleum Rev., vol. 39, Aug. 10, 1918, p. 95) is reached that it is inadvisable to take further steps in the home production of fuel oil beyond those already taken.

**407**. ———. Scottish shale-oil industry. Vol. 15, Dec., 1918, pp. 506–509. Description of the plant and refining processes used by the Pumpherston Oil Co. (Ltd.).

*See also* Nos. 392, 1047.

## UTILIZATION.

**408**. Oildom. Gasoline substitutes abroad. Vol. 8, Jan., 1918, pp. 17–18. Tells of the investigation in England of the possibility of the use of alcohol as a motor fuel and of the use of coal gas to run motor vehicles, with its attendant problems of suitable containers.

*See also* Nos. 5, 10a, 403.

## STATISTICS.

Imports into the United Kingdom.

**409**. Evening Post. The oil trade in Great Britain in 1917. Oil Industry Rev., Mar. 2, 1918, p. 18. Review of market conditions and statistics of imports of crude and manufactured oils.

**410**. Great Britain, Home Office. Mines and Quarries: General report, with statistics (annual), by Chief Inspector of Mines. Part 3, Output.

Production of Petroleum.

**411**. Great Britain, Home Office. Mines and Quarries: General report, with statistics (annual), by Chief Inspector of Mines. Part 4, Colonial and foreign statistics. Gives production statistics for all British colonies.

**412**. Production of Shale in Scotland. Great Britain, Home Office. Mines and Quarries: General Report, with statistics (annual), by Chief Inspector of Mines. Part 3, Output. Statistics of oil-shale industry in Scotland.

*See also* No. 391.

### LEGISLATION.

**413**. Petroleum Review. The petroleum (production) bill, 1918. Vol. 39, Aug. 10, 1918, p. 92. Text of the bill "to make provision with respect to the searching and boring for and getting petroleum, and for purposes connected therewith" in England.

## ROUMANIA (136).

Occurrence (Ozokerite), *see* No. 1.

### GEOLOGY AND ORIGIN.

**414**. Masterson, T. S. The petroleum industry of Roumania. Jour. Inst. Petroleum Tech., vol. 4, Feb., 1918, pp. 79–93; discussion, pp. 94–103; Petroleum Rev., vol. 38, Jan. 19, 1918, pp. 43–44; Jan. 26, pp. 53–54; Petroleum World, vol. 15, Feb., 1918, pp. 57–60. Gives location of deposits and describes the formations in which they are found. Describes primitive and modern methods of drilling and producing oil, explains the Roumanian system of acquiring oil lands and regulations as to ownership of oil properties. Gives production figures for 1915 by fields, and a general sketch of conditions that existed before the German invasion of 1916.

*See also* No. 167.

### DEVELOPMENT AND PRODUCTION.

**415**. McCollum, L. R. Peace means revival of Roumanian fields. Nat. Petroleum News, vol. 10, Nov. 20, 1918, pp. 20, 22. Brief history of development in Roumania, particularly in the adoption of modern drilling methods.

**416**. Petroleum Review. The German control in Roumania. Vol. 38, June 22, 1918, pp. 395–396. Summary of the petroleum treaty between Germany and Austria-Hungary and Roumania, providing for the acquisition of the Roumanian industry by Germany for a period of 30 years.

*See also* No. 414.

Statistics, *see* Nos. 384, 414.

## RUSSIA (137).

### HISTORY.

**417**. Manchester, H. H. Use of natural gas in ancient times. Gas Age, vol. 42, July 1, 1918, pp. 13–14. Notes from ancient writings relating to fire worship and the natural gas temples of Baku.

Occurrence (Ozokerite, Asphalt), *see* No. 1.

### DEVELOPMENT AND PRODUCTION.

**418**. Petroleum. Russia, the land of tragedy and strife. Vol. 4, April, 1918, pp. 22–24. Includes brief account of the primitive methods of development used by the Russians.

*See also* No. 248.

Utilization, *see* No. 1688.

### STATISTICS.

General.

**419**. Ghambashidze, D. The Russian petroleum industry and its prospects. Jour. Inst. Petroleum Technologists, vol. 4, April, 1918, pp. 158–184; discussion, pp. 184–188. Petroleum Rev., vol. 38, March 23, 1918, p. 183, March 30, pp. 205–207, Apr. 6, p. 223, Apr. 13, pp. 235–236. Petroleum World, vol. 15, April, 1918, pp. 145–149. Reviews the present economic aspect of the industry and gives latest available statistics and information as to production, transportation, refining, exports, and prices.

420. Petroleum Review. The Russian petroleum industry. Its development and importance. Vol. 39, Oct. 5, 1918, p. 215. Extract from paper on "The Caucasian petroleum industry and its importance for eastern Europe and Asia," by D. Ghambashidze, published by the Anglo-Georgian Society, of London. Extract relates to the participation of foreign capital in the Russian industry.

Prices.

421. Petroleum Review. "Home and foreign market intelligence" gives weekly report of prices.

*See also* No. 384.

## TURKEY (138).

### HISTORY AND OCCURRENCE.

422. Oswald, Felix. Oil and asphalt in Palestine, Syria, and Mesopotamia Petroleum World, vol. 15, November, 1918, pp. 459–461. Calls attention to definite localities in these countries where petroleum may be obtained.

423. Stéphanidès, Michel. Le feu grégeois ou le "feu liquide" des Byzantins. Comptes rend., t. 167, July 22, 1918, pp. 165–167. Gives arguments to show that this liquid fire was petroleum.

## OTHER COUNTRIES (139).

### ITALY.

Occurrence (asphalt), *see* No. 1.

### PROPERTIES AND THEIR DETERMINATION.

424. Rodano, A. G. Utilization of Italian products for the production of benzene. Annali di chimica applicata, vol. 10, 1918, pp. 23–26; Chem. Abs. vol. 13, Jan. 20, 1919, pp. 182–183. A study of a new oil occurring in Pavia, Italy.

*See also* No. 425.

Refining and Refineries, *see* No. 424.

### UTILIZATION.

425. Engineering. Natural gas used for lighting at Pisa. Vol. 105, June 7, 1918, p. 643. Account of the discovery of gas in boring for water and of its subsequent use for domestic lighting and heating in the town of Pisa. Gives analysis of the gas.

### STATISTICS.

Production of Petroleum and Asphalt.

426. Revista del Servizio Minerario gives annual statistics for Italy.

*See also* No. 384.

### LEGISLATION.

427. Petroleum Review. The State control of petroleum in Italy. Vol. 38, Feb. 23, 1918, p. 116. Tells provisions of a decree of Jan. 17, 1918, published in the Gazzetta Ufficiale, Rome, relative to the state control of the industry.

### SWEDEN.

### REFINING AND REFINERIES.

428. Petroleum Review. The Swedish oil industry. Vol. 39, Dec. 28, 1918, p. 414. Tells of intended development of the Kinnekulle field, Sweden, where oil is to be obtained from schists by methods based on those used in Scotland. Gives brief description of the schists and of the process of distillation.

# ASIA (140).

## STATISTICS.

PRODUCTION OF PETROLEUM, NATURAL GAS, AND ASPHALT.

**429.** U. S. GEOLOGICAL SURVEY. Mineral resources, pt. 2, nonmetals. Annual statistics for principal producing countries.

# INDIA (142).

## GEOLOGY AND ORIGIN.

**429a.** HAYDEN, H. H. General report of the Geological Survey of India for the year 1917. Rec. Geol. Survey of India, vol. 49, part 1, 1918, pp. 1–22. Includes brief account of investigation of seepages of oil in the Punjab.

**430.** LA TOUCHE, T. H. D. A bibliography of Indian geology and physical geography, with an annotated index of minerals of economic value. Published by order of the government of India and printed in Calcutta for the Geological Survey of India. Part I, 1917, 571 pp. Part II, 1918, 490 pp. London, Kegan Paul & Co.

**431.** PINFOLD, E. S. Notes on structure and stratigraphy in the Northwest Punjab. Rec. Geol. Survey of India, vol. 49, part 3, Dec., 1918, pp. 137–159. A study prompted by the search for oil in this region.

## STATISTICS.

IMPORTS.

**432.** INDIA GEOLOGICAL SURVEY RECORDS. Gives annual statistics of petroleum imports.

PRODUCTION OF PETROLEUM.

**433.** GREAT BRITAIN, HOME OFFICE. Mines and Quarries: General report, with statistics (annual), by Chief Inspector of Mines. Part 4, Colonial and Foreign statistics.

*See also* No. 429.

# JAPAN (143).

## OCCURRENCE.

**434.** CLEMENTS, J. M. Petroleum in Japan. Econ. Geol., vol. 13, Nov., 1918, pp. 512–523. Gives history of development, location of fields and their geology, character of the oil, and statistics, including drilling costs, depth of wells, number of wells, prices, production, imports, and exports.

**435.** ITO, K. Nippon Oil Company of Japan. Min. and Oil Bull., vol. 4, June, 1918, pp. 271–274, 296. Petroleum Rev., vol. 39, July 27, 1918, pp. 53–54. History of development in Japan from earliest times.

GEOLOGY, DEVELOPMENT, AND PRODUCTION, *see* No. 434; STATISTICS, *see* Nos. 429, 434.

# OTHER COUNTRIES (149).

## PERSIA.

### GEOLOGY AND ORIGIN

**436.** BUSK, H. G., AND MAYO, H. T. Some notes on the geology of the Persian oil fields. Jour. Inst. Petroleum Technologists, vol. 5, Dec., 1918, pp. 3–26; discussion, pp. 26–33; vol. 5, April, 1919, pp. 139–140. Petroleum Rev., vol. 39, Oct. 26, 1918, pp. 271–272; Nov. 2, pp. 287–288; Nov. 9, pp. 307–308. Petroleum World, vol. 15, Nov., 1918, pp. 479–481. Gives chief geological features of the oil fields in the Persian concession of the Anglo-Persian Oil Company and allied concerns, pointing out particularly ways in which their stratigraphy and structure differ from that of other fields.

**437.** Heinicke, A. Die Bodenschätze Südwest Persiens, des richsten Erdölgebiets der Welt. Prometheus, vol. 29, July 27, 1918, pp. 383–385; Aug. 3, pp. 391–393.

## AFRICA (150).

### HISTORY AND OCCURRENCE.

**438.** Petroleum Age. Waking Egypt finds oil. Vol. 5, June, 1918, pp. 197–198. Tells of the discovery of the Hurghada oil field.

**439.** Petroleum Review. Egyptian petroleum developments. Vol. 38, May 25, 1918, p. 230. Brief history of development in Egypt, and review of present conditions.

**440.** South African Mining Journal. The position of the Sakalava Madagascar Proprietary Oil Fields. Vol. 27, May 4, 1918, p. 5. Includes extract from manager's report to the company which discusses the probability of obtaining oil in commercial quantity.

*See also* Nos. 1, 393.

### GEOLOGY AND ORIGIN.

**441.** Du Toit, A. L. The zones of the Karroo system and their distribution. Proc. Geol. Soc. South Africa, Jan.–Dec., 1918 (published 1919), pp. xvii–xxxvi. With geological map of Natal showing these zones.

**442.** Hume, W. F. The oil-fields region of Egypt. Petroleum Rev., vol. 38, Jan. 12, 1918, pp. 27–28; Feb. 23, pp. 125–126; March 9, pp. 159–160; March 16, pp. 171–172; March 23, pp. 191–192; April 20, pp. 255–256; May 4, pp. 283–284; May 11, pp. 301–302; May 18, pp. 317–319. Gives in detail the geology, paleontology, and geographic characteristics of the region, and the extent of the oil-field area.

**443.** ——— Studies of the oil-field region of Egypt. Petroleum Rev., vol. 39, Dec. 7, 1918, pp. 367–368. Geological description.

**444.** Moussu, G. Les terrains pétrolifères au Maroc. Bull. Soc. d'Encouragement pour l'Industrie Nationale, t. 130, Sept.–Oct., 1918, pp. 248–254. On the occurrence and possibilities of petroleum in Morocco.

**445.** Rogers, A. W. Nomenclature of the Permo-Carboniferous rocks in South Africa. British Association for the Advancement of Science, Report, 1917 (London, 1918), pp. 111–113.

**446.** Trevor, T. G. The non-metallic minerals of the Union. South African Min. Jour., vol. 27, Aug. 10, 1918, pp. 329, 331. Includes notes on the occurrence of mineral oil and oil shales in South Africa.

**447.** Wagner, P. A. The mineral industry of the Union of South Africa and its future. South African Jour. Sci., vol. 15, Sept., 1918, pp. 45–78. Includes brief statement (p. 70) of petroleum possibilities and account of oil shale and natural gas development in the Karroo Province.

**448.** ——— Petroleum and its prospects in South Africa. Petroleum Rev., vol. 38, Feb. 2, 1918, pp. 75–76; Feb. 9.pp, 93–94; Feb. 16, pp. 107–108; Feb. 23, pp. 123–124; March 2, pp. 141–142; March 9, pp. 157–158. Abstract in Mining Mag., vol. 18, Jan., 1918, pp. 46–48. Reprinted from the South African Journal of Industries. Describes the formations in South Africa which seem to afford favorable conditions for accumulation, and also actual occurrences of bitumen termed "pseudo-anthracite" or "pseudo-coal," giving its composition and properties. Concludes that while the possibility of the existence of valuable petroleum fields in British South Africa should not be dismissed, the likelihood of any important discovery seems remote. Natural gas possibilities are discussed, and the prospects of establishing a shale-oil industry dealt with at length. Shale occurrences are described and results of tests given.

*See also* Nos. 222, 451–454.

Properties, *see* No. 448.

### UTILIZATION.

**449.** Automotive Industries. South Africa using new motor fuel. Vol. 39, July 18, 1918, p. 121. Tells of the use of Natalite, a by-product of sugar, as an automobile fuel.

### STATISTICS.

**450.** U. S. Geological Survey. Mineral resources, pt. 2, non-metals, Annual production figures for Egypt.

## OCEANIA AND MALAYSIA (160).

### GEOLOGY.

**451–454.** British Association for the Advancement of Science. Report of Committee on nomenclature of the Carboniferous, Permo-Carboniferous, and Permian rocks of the Southern Hemisphere. Report, 1917 (London, 1918), pp. 106–120. Includes the following: Chapman, F., Notes on report of committee on Carboniferous, Permo-Carboniferous, and Permian rocks of the Southern Hemisphere, pp. 106–107. Twelvetrees, W. H., The Permo-Carboniferous system in Tasmania, pp. 107–108. Marshall, P., Permo-Carboniferous rocks of New Zealand, pp. 108–109. Kitson, A. E., The nomenclature of the Carboniferous, Permo-Carboniferous, and Permian rocks of the Southern Hemisphere, pp. 109–111. Rogers, A. W., Nomenclature of the Permo-Carboniferous rocks in South Africa, pp. 111–113. Watson, D. M. S., Notes on the nomenclature of the Carboniferous, Permo-Carboniferous, and Permian rocks of the Southern Hemisphere, pp. 113–115. Gregory, J. W., The Australian Permian and Carboniferous, pp. 115–120.

### STATISTICS.

Production of Petroleum and Asphalt.

**455–456.** U. S. Geological Survey. Mineral resources, pt. 2, nonmetals. Annual production statistics for principal producing countries.

## AUSTRALIA (161).

Occurrence, *see* Nos. 1, 393.

### GEOLOGY.

**457–458.** Howchin, Walter. The geology of South Australia. Adelaide, Government Printer, 1918. 543 pp. First part considers geologic processes, earth materials, and dynamic principles. Second part outlines the historical geology of South Australia.

*See also* Nos. 451, 454.

### DEVELOPMENT AND PRODUCTION.

**459.** Cameron, W. E. The Roma oil bore. Queensland Government Mining Jour., vol. 19, May, 1918, pp. 200–202. Gives progress of the work at the well and discusses possibilities of obtaining gasoline from the Roma gas.

### UTILIZATION.

**460–461.** Lyle, T. R., and others. Power alcohol—proposals for its production and utilization in Australia. Australia Advisory Council of Science and Industry, Bull. 6, 1918. 69 pp. Extract in Sci. Am. Suppl., vol. 85, Apr. 27, 1918, p. 271. *See also* Automotive Industries, vol. 38, May 30, 1918, p. 1037.

Statistics, *see* No. 455.

## BORNEO, JAVA, AND SUMATRA (162).

### REFINING AND REFINERIES.

**462**. Phillips, J. W. Oil and gasoline production in the Dutch East Indies. Oil Age, vol. 14, November, 1918, pp. 9, 11–12. Tells of activities of the Royal Dutch Shell, particularly in the matter of setting up installations for absorption and compression gasoline plants.

### UTILIZATION.

**463**. Dubosc, A. [Petroleum from Borneo and its various uses.] La Caoutchouc & la Gutta-percha, vol. 15, 1918, pp. 9458, 9550–9552. Chem. Abs., vol. 12, Dec. 10, 1918, p. 2711.

Statistics, *see* No. 455.

## NEW GUINEA (163).

### OCCURRENCE AND HISTORY.

**464**. Wade, Arthur. The oil fields of Papua. Petroleum World, vol. 15, March, 1918, pp. 100–102. Account of development from 1912 to the end of 1917.

### GEOLOGY.

**464a**. Chapman, Frederick. Report on a collection of Cainozoic fossils from the oil fields of Papua. With geologic introduction by Arthur Wade. Bulletin of the Territory of Papua, No. 5. Melbourne, 1918. 18 pp.

**465**. Langford, W. G. Report on the geology of the Hohoro district, Papuan oil fields. Bull. of the Territory of Papua, No. 4, Melbourne, 1918. 16 pp. Gives account of the physiographic features and geology of part of the Vailala oil district of Papua where development is in active progress.

Statistics, *see* No. 455.

## NEW ZEALAND (164).

Occurrence, *see* No. 393.

### GEOLOGY.

**466**. Chapman, Frederick. Descriptions and revisions of the Cretaceous and Tertiary fish remains of New Zealand. Geol. Survey Branch, Dept. of Mines, Paleontological Bull. No. 7. Wellington, June, 1918.

Statistics, *see* No. 455.

## PHILIPPINES (165).

Occurrence (Asphalt), *see* No. 1.

### UTILIZATION.

**467**. Cox, A. J. Philippine fuels. Philippine Bureau of Science Press Bull. No. 86, Feb., 1918. 8 pp. Includes (p. 5) brief discussion of the possibilities of Philippine petroleum if developed in commercial quantities.

### STATISTICS.

Imports of Petroleum.

**468**. U. S. Bureau of Foreign and Domestic Commerce. Monthly summary of foreign commerce of the United States gives quantity and value of crude and refined mineral oils exported to the Philippines.

# GEOLOGY AND ORIGIN (200).

## GENERAL AND MISCELLANEOUS GEOLOGY (210).

**469.** JOHNSON, R. H. Cause of the absence of water in dry sandstone beds. Bull. Geol. Soc. Am., vol. 29, March, 1918, p. 105 (Abstract). Discusses the displacement of original water by gas in "dry sands" or sandstone beds without water, and refutes arguments against this theory.

**470.** O'HARRA, C. C. The geology of petroleum deposits. Pahasapa Quarterly, vol. 7, Feb., 1918, pp. 17–37. General review.

**471.** ———. The "Why" of geology in the oil game. Petroleum, vol. 5, Aug., 1918, pp. 139–140, 142, 144, 147–148. Brief discussion of the important facts of oil geology, such as origin, accumulation, migration, porosity, types of oil-bearing structure, etc.

**472.** TARR, W. A. Oolites in shale and their origin. Bull. Geol. Soc. Am., vol. 29, Sept., 1918, pp. 587–600. Includes discussion of the geology of oolitic shales, description of the oolites and discussion of their origin.

**473.** ZIEGLER, VICTOR. Popular oil geology. New York, John Wiley & Sons, 1918, 149 pp. Condensed treatment of the more important phases of modern oil geology.

*See also* Nos. 1, 1721.

## PHYSICAL AND CHEMICAL CHARACTERISTICS OF OIL-BEARING ROCKS (230).

**474.** JONES, W. F. Discussion of paper of A. W. Lauer on the petrology of reservoir rocks and its influence on the accumulation of petroleum, in Econ. Geol., vol. 12, Aug., 1917, pp. 435–472. (*See* No. 391, 1917 Bibliography.) Econ. Geol., vol. 13, March, 1918, pp. 147–149. Discussed also by J. O. Lewis, Econ. Geol., vol. 13, Jan., 1918, pp. 65–69; by E. W. Shaw, Econ. Geol., vol. 13, May, 1918, pp. 207–222; and by G. S. Rogers, Econ. Geol., vol. 13, June, 1918, pp. 316–324. *See* under authors named.

**475.** LEWIS, J. O. Petrology of reservoir rocks. Econ. Geol., vol. 13, Jan., 1918, pp. 65–69. Discussion of paper by A. W. Lauer, on the petrology of reservoir rocks and its influence on the accumulation of petroleum, Econ. Geol., vol. 12, Aug., 1917, pp. 435–472. (*See* No. 391, 1917 Bibliography.) Discussed also by W. F. Jones, Econ. Geol., vol. 13, March, 1918, pp. 147–149; by E. W. Shaw, Econ. Geol., vol. 13, May, 1918, pp. 207–222; and by G. S. Rogers, Econ. Geol., vol. 13, June, 1918, pp. 316–324.

**476.** OIL TRADE JOURNAL. Classification and characteristics of oil sands. Vol. 9, Feb., 1918, pp. 125–126. Describes and gives examples of sandstones, limestones, and shales as the three classes of producing oil formations, and points out characteristics of desirable oil sands.

**477.** ROGERS, G. S. The petrology of reservoir rocks and its influence on the accumulation of petroleum. Econ. Geol., vol. 13, June, 1918, pp. 316–324. Discussion of paper by A. W. Lauer on this subject, Econ. Geol., vol. 12, Aug., 1917, pp. 435–472. (*See* No. 391, 1917 Bibliography.) Discussed also by W. F. Jones, Econ. Geol., vol. 13, March, 1918, pp. 147–149; by E. W. Shaw, Econ. Geol., vol. 13, May, 1918, pp. 207–222; and by J. O. Lewis, Econ. Geol., vol. 13, Jan., 1918, pp. 65–69.

**478.** SHAW, E. W. Crevices and cavities in oil sands. Econ. Geol., vol. 13, May, 1918, pp. 207–222. Discussion of paper by A. W. Lauer on the petrology of reservoir rocks and its influence on the accumulation of petroleum, in Econ. Geol., vol. 12, Aug., 1917, pp. 435–472. (*See* No. 391, 1917 Bibliography.) Discussed also by J. O. Lewis, Econ. Geol., vol. 13, Jan., 1918, pp. 65–69; by W. F. Jones, Econ. Geol., vol. 13, March, 1918, pp. 147–149; and by G. S. Rogers, Econ. Geol., vol. 13, June, 1918, pp. 316–324.

*See also* Nos. 488, 1052.

## ORIGIN, THEORIES (250).

**479.** PETERSON, ALFRED. The origin of petroleum. Why anticlines are not always oil bearing. Petroleum Rev., vol. 39, Dec. 14, 1918, p. 377.

*See also* Nos. 252, 801, 900, 1050.

## ACCUMULATION (260).

**480.** DALTON, W. H. Periodicity in spouters. Jour. Inst. Petroleum Tech., vol. 4, Feb., 1918, p. 104. Suggestions as to the forces influencing the spouting of wells, such as meteorological conditions, etc.

**481.** DALY, M. R. Geosynclines and petroliferous deposits. Trans. Am. Inst. Min. Eng., vol. 57, 1918, pp. 1054–1065; discussion, pp. 1065–1070. Published first in Bull. Am. Inst. Min. Eng., Aug., 1917, pp. 1135–1146; discussion, Jan., 1918, pp. 97–99. "A contribution to the study of the relations between earth movements and hydrocarbon accumulations."

**482.** JOHNSON, R. H. The distribution of underground salt water and its relation to the accumulation of oil and gas. Bull. Am. Assoc. Petroleum Geol., vol. 2, 1918, pp. 172–176.

**483.** KINDLE, E. M. Separation of salt from saline water and mud. Bull. Geol. Soc. Am., vol. 29, Sept., 1918, pp. 471–487. Notes on laboratory observations on the behavior of salt in the evaporation of saline mixtures and discussion of their geological significance.

*See also* Nos. 477, 488.

## MIGRATION (260.2).

**484.** McCOY, A. W. On the migration of petroleum through sedimentary rocks. Bull. Am. Assoc. Petroleum Geologists, vol. 2, 1918, pp. 168–171. Concludes that extensive migration of oil is very improbable and that the present occurrences of oil are "in situ" phenomena.

**485.** ZIEGLER, VICTOR. The movements of oil and gas through rocks. Econ. Geol., vol. 13, July, 1918, pp. 335–348; discussion, vol. 13, Nov., 1918, pp. 550–551, by C. W. Washburne. Sci. Am. Suppl., vol. 86, Dec. 14, 1918, pp. 374–375; Oil Age, vol. 14, Dec., 1918, pp. 22–26; vol. 15, Jan., 1919, pp. 22–25; Oil and Gas Jour., vol. 17, Dec. 13, 1918, pp. 52–55. Summarizes the views of various investigators as to the causes of oil migration, classifying them first as gravitative, molecular, intratelluric, and chemical, and second, according to their effects, as selective or segregative, and concentrative. A partial list of papers on migration is appended.

## RESERVOIRS FOR OIL AND GAS (260.3).

**486.** MATHER, K. F. Superficial dip of marine limestone strata. A factor in petroleum geology. Econ. Geol., vol. 13, May, 1918, pp. 198–206. Concludes that "a careful study of the lithologic features and structural relations of marine limestones is essential to successful determination of detailed structure, not only because of its value in correlating and identifying isolated outcrops but because of its bearing upon the problem of recognizing superficial dip and its aid in avoiding the pitfalls which lie in the too-frequent conclusion that the observed dip is reproduced in beds several hundred feet below the surface." *See also* No. 487.

**487.** SHAW, E. W. Anomalous dips. Econ. Geol., vol. 13, Dec., 1918, pp. 598–610. Cites examples of peculiar dips and discusses the causes of dips. See *also* No. 486.

**488.** ZIEGLER, VICTOR. Reservoirs of oil and gas. Colorado School of Mines Mag., vol. 8, Feb., 1918, pp. 15–16. A chapter from "Popular Oil Geology." (*See* No. 473.) Describes sandstones, limestones, shales, etc., which hold the oil, and discusses tests for oil sands and shapes of reservoirs.

APPLIED GEOLOGY (270), see Nos. 289, 498, 612.

## DETERMINATION OF OIL AND GAS FIELDS (270.1).

**488a.** BLACKBURN, W. D. The application of topographic maps to oil operations. Oil Weekly, No. 106, Oct. 19, 1918, pp. 20, 22. Discusses the value to the oil operator of well-planned and well-executed topographic maps.

**489.** BURTON, G. E. The work of the petroleum geologist. Eng. and Min. Jour., vol. 105, May 4, 1918, pp. 822–824. Discusses the methods used by competent petroleum geologists in the economic development of oil and gas fields.

**490.** CARPENTER, EVERETT. Petroleum geology, its terms defined, its application described. Petroleum, vol. 6, Nov., 1918, pp. 158, 160.

**491.** CLAPP, F. G. How science hunts for oil. Petroleum Age, vol. 5, July, 1918, pp. 235–237; Petroleum Age, vol. 5, Oct., 1918, p. 342. Classifies surface indications of oil and discusses their value as evidence of hidden fields.

**492.** DALTON, W. H. On the relative importance of oil seepages. Jour. Inst. Petroleum Tech., vol. 5, Dec., 1918, pp. 70–72. Brief discussion of the promise of valuable yield from seepages from the following sources: (1) crevices in impervious strata on the crests of anticlinal folds; (2) outcrops of pervious beds more or less charged with oil or gas; (3) fault fractures; (4) joints and vesicles in volcanic rocks.

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**495.** SHAW, E. W. Relation between occurrence and quality of petroleum and broad areas of uplift and folding. Bull. Geol. Soc. Am., vol. 29, Mar., 1918, pp. 87–88 (Abstract). Enumerates considerations to which attention must be given in attempting to find the cause of the fact that most of the oil and gas occurs in geosynclines and that there seems to be some relation between the character of the hydrocarbons and general structural features, and presents conclusions.

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## DEVELOPMENT AND PRODUCTION (OIL AND GAS) (300).

### GENERAL.

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*See also* No. 918.

### DRILLING METHODS, TOOLS, AND EQUIPMENT (310).

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### DRILLING METHODS (311).

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### PERCUSSION (311.1).

**501.** Simmons, Jesse. Two methods of drilling for oil. Pahasapa Quarterly, vol. 7, April, 1918, pp. 29–32. Describes cable and rotary drilling.

### ROTARY (311.2).

**502.** McCollum, L. R. Rotary can drill in any formation with proper bit. Nat. Petroleum News, vol. 10, Nov. 6, 1918, pp. 38, 40. Traces development and changes in the rotary outfit and method of drilling.

**503.** ———. Rotary drilling will conserve steel. Nat. Petroleum News, vol. 10, Sept. 4, 1918, pp. 18, 20, 22. Shows how rotary drilling is a pipe saver, a time saver, and a money saver in localities where the formations permit its use.

*See also* No. 501.

### DRILLING TOOLS (312).

### PERCUSSION (312.1).

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**506.** Bell, T. W. Well jar. United States patent 1,277,683, Sept. 3, 1918.

**507.** Cairns, H. S. Bore-hole apparatus. English patent 114,484, May 29, 1918. Application 5,027, Apr. 10, 1917

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513. HARDISON, E. A. Casing tongs. United States patent 1,258,675, Mar. 12, 1918.

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515. HEETER, C. M. Spudding attachment for well-drilling machines. United States patent 1,265,653, May 7, 1918.

516. HOLLAND, W. J. Drill. United States patent 1,266,467, May 14, 1918.

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*See also* Nos. 502, 507, 513, 516, 517, 518, 519, 522, 526, 527, 531, 534.

## EQUIPMENT (313).

### RIGS AND DERRICKS AND PARTS THEREOF (313.1).

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### CASING AND FITTINGS (313.3).

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## CONTROL OF WATER AND WASTE (314).

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*See also* Nos. 89, 667.

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### MUD FLUID (314.3).

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*See also* Nos. 240, 241, 594.

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#### PATENT.

**603.** Vaughan, P. E., and Halstead, S. M. Well construction. United States patent 1,289,320, Dec. 31, 1918.

## CONTROL OF LARGE WELLS AND WELLS ON FIRE (315).

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## USE OF EXPLOSIVES, SHOOTING (316).

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## PLUGGING AND ABANDONING (317).

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*See also* No. 238, 242.

## RECORDS OF FORMATION, COST, ETC. (318).

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*See also* Nos. 78, 79, 494, 499, 574, 594.

# PRODUCTION (METHODS, EQUIPMENT, AND OPERATIONS) (320).

## PUMPING OIL WELLS (322).

*See* No. 667.

### TOOLS AND EQUIPMENT (322.1)

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643. SHEASLEY, C. H. Packer for oil wells. United States patents 1,262,107, Apr. 9, 1918; 1,273,548, July 23, 1918.

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*See also* Nos. 571–577.

## OTHER METHODS OF OIL PRODUCTION (323).

*See* No. 571.

### AIR LIFTS (323.3).

PATENT.

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## CARE OF PRODUCING OIL WELLS (324).

*See* No. 571.

### CLEANING OUT (324.1).

PATENTS.

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650. Carden, D. A. Cleaning device for wells. United States patent 1,259,721, March 19, 1918.

651. Green, H. M. Well cleaning device. United States patent 1,272,253, July 9, 1918.

652. Gregory, Ralph, and Minton, W. E. Oil well cleaning apparatus. United States patent 1,271,511, July 2, 1918.

653. Long, L. M. Combination well cleaner. United States patent 1,257,260, Feb. 19, 1918.

654. Minton, W. E. Well cleaning device. United States patent 1,260,241, Mar. 19, 1918.

*See also* No. 606.

### HEATING AND STEAMING, PARAFFINATION (324.2).

PATENT.

655. Neal, C. A. Electric heater for oil wells. United States patent 1,264,119, April 23, 1918.

*See also* No. 606.

Agitating, *see* No. 606; Use of Explosives, *see* Nos. 606, 607, 608, 609.

### OPERATION OF WELLS PRODUCING WATER (324.5).

PATENT.

656. Burns, R. L., and Keniston, G. I. Cement-dump bailer for oil wells. United States patent 1,275,378, Aug. 13, 1918.

*See also* Nos. 88, 89, 102, 223, 239, 243, 244, 245, 594, 595, 596.

### DETERMINATION OF SOURCE OF WATER (324.6).

657. Daly, M. R. Water surfaces in the oil fields. Bull. Am. Inst. Min. Eng., Jan., 1918, pp. 151–157. Transactions, vol. 59, 1918, pp. 557–563. "A contribution to the study of the conditions of equilibrium of the 'free surface' of a water body inclosed in a porous medium." The Cushing field, Oklahoma, is used as an example.

*See also* Nos. 239, 313, 482,

#### WATER ANALYSES (324.61).

**658.** Neal, R. O. Water problem in oil wells is discussed. Oil and Gas Jour., vol. 17, Sept. 20, 1918, p. 43. Brief discussion of the importance and successful use in Kansas fields of analyses of waters from various horizons for determining the source and cause of waters invading oil and gas bearing formations.

*See also* No. 223.

### OPERATION OF WELLS WITH LOOSE SAND (324.7).

#### PATENT.

**659.** Bell, G. F. Sand bailer for wells. United States patent 1,257,176, Feb. 19, 1918.

### TOOLS AND EQUIPMENT (324.8).

#### PATENTS.

**660.** Baldwin, C. H. Rod coupling. United States patent 1,265,418, May 7, 1918.

**661.** Jergins, A. T. Hydraulic oil-well washer. United States patent 1,276,536, Aug. 20, 1918.

**662.** Lindsey, W. N. Drain valve for well pipes. United States patent 1,267,093, May 21, 1918.

**663.** Summerrow, E. D. Device for controlling the flow of fluid from wells. United States patent 1,273,949, July 30, 1918.

*See also* No. 659.

## GAS WELLS (325).

#### PATENT.

**664.** Moser, F. J. Anchor for tubings for gas wells. United States patent 1,283,864. Nov. 5, 1918.

Records and Costs, *see* Nos. 90, 574, 577.

# PRODUCTION, GATHERING, AND TREATMENT (330).

## OIL (331).

### GAGING AND SAMPLING (331.1).

**665.** Johnson, R. H., and Bernard, W. E. A feasible plan for gaging individual wells. Trans. Am. Inst. Min. Eng., vol. 57, 1918, pp. 1050–1052; discussion, pp. 1052-1053. Published first in Bull. Am. Inst. Min. Eng., June, 1917, pp. 955–957; discussion, Jan., 1918, pp. 100–101. Enumerates the advantages of recording the rate of production of individual wells and gives two diagrams showing a plan for gaging the wells on a lease in rotation.

### CLEANING AND TREATING FOR WATER, BOTTOM SETTLING, ETC. (331.3).

**666.** Petroleum. Saving waste petroleum scientifically. Vol. 5, Oct., 1918, p. 193. Discusses the necessity for conserving the petroleum content of B. S., mentioning particularlv the development of the Barnickel process of the treatment of oil emulsions by water-softening agents. United States patent 1,223,659, Apr. 24, 1917. *See* No. 771, 1917 Bibliography.

**667.** Williams, W. G. Great waste is caused by bottom settlings. Oil and Gas Jour., vol. 17, Dec. 6, 1918, p. 47. Discusses the waste of good oil in the form of bottom settlings and the solution of the problem by the use of proper drilling, pumping, and storing methods, and an efficient treating system.

## GAS AND VAPORS (332).

### TESTING AND METERING (332.1).

**668.** Pfister, A. J. Apply conservation to gasoline plants. Nat. Petroleum News, vol. 10, Oct. 2, 1918, p. 42. Describes separator for taking gas out of oil from flowing wells and a miniature laboratory plant for sampling and testing gas from various leases.

### SEPARATION FROM OIL OR WATER (332.4).

PATENTS.

**669.** Jones, Philip. Process and apparatus for the separation of oils and gases. United States patent 1,255,018, Jan. 29, 1918.

**670.** Putnam, J. K. Separator for wells. United States patent 1,279,758, Sept. 24, 1918.

**671.** Trumble, M. J. Crude petroleum and natural gas separator (gas trap). United States patent 1,269,134, June 11, 1918.

*See also* Nos. 623, 668.

## PRODUCTIVENESS OF OIL AND GAS WELLS AND LANDS (340).

**672.** Lewis, J. O., and Beal, C. H. Some new methods for estimating the future production of oil wells. Bull. Am. Inst. Min. Eng., Feb., 1918, pp. 477–504; discussion, Apr., 1918, pp. 835–836, by R. H. Johnson; May, 1918, pp. 1019–1022, by E. W. Shaw. Transactions, vol. 59, 1918, pp. 492–520; discussion, pp. 520–525. Reproduced in full in Oil Age, vol. 15, Jan., 1919, pp. 10–14, 16–18; Feb., pp. 10–12; Mar., pp. 10–12. Abstract in West. Eng., vol. 9, Mar., 1918, pp. 105–110. Outlines methods commonly used and gives explanation of newer methods believed to be more accurate and easier of application, based on records of properties in Oklahoma.

*See also* Nos. 67, 1052.

## ARTIFICIAL FACTORS, STIMULATION OF PRODUCTION (342).

### SPACING OF WELLS (342.2).

**673.** Johnson, R. H. Staggering locations for oil wells. Bull. Am. Inst. Min. Eng., August, 1918, pp. 1311–1316. Explains the advantages of the triangular method of arranging wells in a given area, known as "staggering," and gives diagrams, formulas, and tables to assist the producer in planning such an arrangement.

*See also* Nos. 325, 326.

### STIMULATION OF PRODUCTION (342.4).

#### DECREASE OF PRESSURE (342.41).

**674.** Peterson, F. P. Application of vacuum to oil wells. Oil and Gas Jour., vol. 17, June 14, 1918, pp. 45–46; June 28, pp. 48, 54. Discusses benefits to be derived, problems to be solved, and difficulties to be met after vacuum application, and suggests further study of this feature of oil operation in order to determine conditions which permit of its profitable application.

### INCREASE OF PRESSURE BY AIR OR GAS (342.42).

#### PATENT.

**675.** SQUIRES, FREDERICK. Recovery of oil from oil sands. United States patent 1,263,618, April 23, 1918.

USE OF WATER, *see* No. 71.

## ESTIMATING CONTENT OF OIL AND GAS LANDS (344).

**676.** PACK, R. W. The estimation of petroleum reserves. Trans. Am. Inst. Min. Eng., vol. 57, 1918, pp. 968–981; discussion, pp. 981–983. Published first in Bull. Am. Inst. Min. Eng., Aug., 1917, pp. 1121–1134; discussion, Oct., pp. 1866–1868. Considers briefly the saturation method, and, in greater detail, the production curve method, concluding that the latter should be used in estimating reserves in producing fields, and that untested fields should be estimated by comparing them with producing areas which they resemble geologically, after the reserves in those areas have been estimated by the production curve method. Tells how particular application was made to a California field.

*See also* Nos. 672, 681.

WASTES AND CONSERVATION, *see* No. 324; MINING SOLID BITUMENS, *see* Nos. 1, 1052, 1059, 1061.

## FINANCIAL (APPRAISEMENTS, ROYALTIES, CONTRACTS, COSTS, PRICES) (390).

**677.** CALIFORNIA OIL WORLD. Valuation of well equipment. Vol. 10, Dec. 5, 1918, p. 4. Brief discussion of basis on which to figure depreciation of oil well supplies and field equipment for purposes of Federal taxation.

**678.** FORD, C. L. Land and leasehold division important part of oil land development. Doherty News, vol. 3, March, 1918, pp. 9–12; Petroleum, vol. 4, April, 1918, pp. 122, 124–125. Outlines duties of the land and leasehold division of an oil company in the acquisition of acreage, securing of rights of way, payment of damages, payment of lease rentals, etc.

**679.** JOHNSON, R. H. Oil and gas lease forms. Evening Post Oil Industry Rev., March 2, 1918, pp. 36–37. Gives lease form and discusses questions arising from changing conditions and the advantages of leased land over land in fee.

**680.** REQUA, M. L. Methods of valuing oil lands. Trans. Am. Inst. Min. Eng., vol. 59, 1918, pp. 526–545; discussion, pp. 545–556; also in Bull. Am. Inst. Min. Eng., Feb., 1918, pp. 409–428; discussion, April, 1918, pp. 837–841, by F. G. Clapp and W. N. Best; May, 1918, by E. W. Shaw, pp. 1014–1019. Excerpt in Eng. and Min. Jour., vol. 105, March 23, 1918, pp. 544–548. Paper abstracted from report of the appraisement committee of the Independent Oil Producers Agency. Treats of the valuation of oil lands, wells, and piping without going into details of equipment and other features. Curves and data are given for different California fields and methods of computing values are explained.

**681.** U. S. TREASURY DEPARTMENT. Regulations No. 33 (revised) governing the collection of the income tax imposed by the act of September 8, 1916, as amended by the act of October 3, 1917. Washington, Government Printing Office, 1918. 199 pp. Includes provision for deductions for depletion and depreciation of oil and gas properties.

# TRANSPORTATION, STORAGE, AND DISTRIBUTION (400).

General, *see* No. 2.

## TRANSPORTATION (410).

### PIPE LINES (OIL OR GAS) (411).

**682.** Taylor, F. H. Five hundred million barrels of oil. Oil and Gas Jour., vol. 16, Apr. 25, 1918, pp. 42, 44. A brief history of pipe-line development in the United States and explanation of the system as operated at the present time.

*See also* No. 715.

### CONSTRUCTION AND MAINTENANCE (411.1).

**683.** Clampitt, C. P. Acetylene welding in the natural gas field. Gas Age, vol. 42, Oct. 15, 1918, pp. 341–343. Describes new and interesting developments in welding gas mains.

**684.** Hickstein, E. O. Designing natural-gas-gathering line system for gasoline plant. Am. Gas Eng. Jour., vol. 108, May 4, 1918, pp. 415–417. Shows method of working out a pipe line system with proper size of pipe to meet conditions.

**685.** Natural Gas and Gasoline Journal. Flow of gas in pipes. Vol. 12, May, 1918, pp. 165–168. Reprint of data from the Handbook of the National Tube Company, on piping for low and high pressure.

**686.** Sinclair's Magazine. Building a modern pipe line. Vol. 1, March, 1918, pp. 9–13. Interesting features of construction are discussed.

**687.** Svensen, C. L. Handbook on piping. New York, Van Nostrand, 1918. 359 pp. Contains general information on pipe and pipe fittings and a section on gas and oil piping.

**688.** Winship, G. B. Building a modern pipe line. Petroleum, vol. 6, Dec., 1918, pp. 61–62, 65. Details of construction and maintenance are given.

*See also* Nos. 249, 723.

### STATION EQUIPMENT (411.2).

**689.** Power. New design of oil-line pump. Vol. 48, Oct. 29, 1918, p. 627. Gives advantages and interesting features.

#### PATENT.

**690.** Cunningham, C. G. Universal joint for steam, gas, or other pipes. United States patent 1,284,612, Nov. 12, 1918.

*See also* No. 69.

### LINE EQUIPMENT AND TOOLS (411.3).

**691.** Warren, M. M. Air tanks on pipe lines. Trans. Am. Soc. Civil Eng., vol. 82, 1918, pp. 250–263; discussion, pp. 264–277. Published first in Proc. Am. Soc. Civil Eng., vol. 43, Aug., 1917, pp. 1013–1026; discussion, vol. 43, Oct., 1917, pp. 1869–1872; Nov., pp. 1979–1988; Dec., pp. 2465–2466; vol. 44, Apr., 1918, p. 559. Calls attention to the utility of air tanks on pipe lines and to some of their practical disadvantages. Gives simple formulas for their dimensions and discusses the principles involved.

*See also* No. 687.

Operations, *see* No. 694

### LOSSES (411.5).

693. Oil Trade Journal. Daily loss of more than a million gallons of gasoline attributed to careless methods in the petroleum industry. Vol. 9, Aug., 1918, pp. 46–47. Discusses losses and gives estimated quantities lost in (1) transporting and handling crude oil from wells to refineries, (2) refining, and (3) in transporting and handling gasoline from refinery to distributing points.

### RECORDS AND STATISTICS (411.6).

694. Peper, J. H. Factor tables and data for the calculation of pipe line pumpings, Based on formula of F. M. Towl, C. E. New York, National Process Co., Inc., 1918. 64 pp.

*See also* No. 10.

## TANK CARS AND TANK WAGONS (412).

### CONSTRUCTION AND MAINTENANCE (412.1).

695. Epstein, Max. Development of the tank car. Petroleum, vol. 4, Feb., 1918, pp. 43–45. Brief review of development, giving illustrations of early designs and discussing railroad rates for shipments. Gives table showing the ownership and distribution of tank cars in this country.

696. Petroleum. Development of tank car has been steady and rapid. Vol. 5, June, 1918, p. 83. Brief review of important developments in tank car construction.

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698. Levy, E. D., and Jacobs, H. W. Tank car. United States patent 1,251,978, Jan. 1, 1918.

699. Mittinger, G. E. Band-anchor for tank cars. United States patent 1,254,325, Jan. 22, 1918.

700. Osburn, S. V. Tank car. United States patent 1,264,327, Apr. 30, 1918.

701. Rodman, Thomas, and Stevenson, F. M. Tank support for tank cars. United States patent 1,274,200, July 30, 1918.

702. Schreiber, E. A. Heating apparatus for tank cars. United States patent 1,273,936, July 30, 1918.

703. Stevenson, F. M. Tank car. United States patent 1,253,743, Jan. 15, 1918. Canadian patent 183,267, Mar. 26, 1918. Filed Feb. 23, 1918.

Records and Statistics, *see* No. 695.

## WATER TRANSPORTATION (413).

### TANK STEAMERS (413.1).

#### CONSTRUCTION AND MAINTENANCE (413.11).

704. Engineering News-Record. Different types of framing in two new Government reinforced-concrete ships. Vol. 81, Nov. 28, 1918, pp. 986–989. Includes structural details of a 7,500-ton oil tanker with close-spaced frames with vertical and horizontal reinforcing in shell.

705. International Marine Engineering. Modified design of standard tanker. Vol. 23, July, 1918, pp. 413–415; Oildom, vol. 8, June, 1918, p. 336. Description, with diagrams, of tanker having tanks in pairs separated by cofferdams with independent bulkheads.

706. International Marine Engineering. Oil tanker of 10,000 tons dead weight adopted as standard by shipping board. Vol. 23, March, 1918, pp. 107–113. Description of tanker, including detail of cargo oil system.

707. Nautical Gazette. Modern oil tankers. Evolution of latest type of bulk oil carrying vessel described. Vol. 93, Mar. 21, 1918, p. 4.

708. Pacific Marine Review. Superheaters on a modern tanker. Vol. 15, May, 1918, pp. 107–108. Description of the "Pearl Shell," built for the Shell Oil Company of California. Diagram of arrangement of superheater tubes on the boilers.

709. Petroleum. Construction of concrete tankers opens new American industry. Vol. 5, July, 1918, pp. 30–34. Gives interesting facts relating to the construction, operation, and advantages of concrete tankers.

710. Petroleum Review. The world's largest oil-tanker. Vol. 39, Dec. 7, 1918, pp. 361–362, 366. Description of the "San Florentino," of the Eagle Transport Company, Ltd.

*See* No. 1253.

### PATENTS.

711. Heyl, G. E. Tank ships. English patent 113,645, Apr. 24, 1918. Application 2806, Feb. 26, 1917.

712. Isherwood, J. W., and Stewart, J. W. Construction of tank vessels. United States patent 1,252,008, Jan. 1, 1918.

713. Kibele, O. B. Pumping system (in oil tanker). United States patent 1,263,679, Apr. 23, 1918.

*See also* No 9.

## BARGES (413.2).

### PATENT.

714. Jack, C. P. M. Tank barge. United States patent 1,284,689, Nov. 12, 1918.

## STORAGE (420).

715. Hubbard, C. L. Storage and handling of fuel oil. National Eng., vol. 22, Feb., 1918, pp. 50–55. Discusses the advantages of fuel oil and problems of handling it; gives characteristics of different oils, methods of burning, approved method of storage, and arrangement of pipes and pumps.

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## TANKS (421).

### PATENTS.

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718. Farr, F. G. Hydraulic storage and delivery system. United States patents 1,286,972–1,286,976, Dec. 10, 1918.

719. ———. Hydraulically operated oil-storage tank. United States patent 1,286,970, Dec. 10, 1918.

720. Frank, J. W. Improvements in tanks. English patent 115,501, July 10, 1918. Application 6,859, May 14, 1917.

721. Harding & Son and Harding, E. Tanks for oil, etc. English patent 116,031, July 24, 1918. Application 16,787, Nov. 15, 1917.

722. Merrill, W. C. Oil tank. United States patent 1,251,801, Jan. 1, 1918.

723. ——— Oil tank and pipe line. United States patent 1,287,070, Dec. 10, 1918.

724. Clifford, Victor. Oil-storage tank. United States patent 1,273,033, July 16, 1918.

725. MacPherson, William. Oil tank. United States patent 1,267,434, May 28, 1918.

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### CONCRETE (421.2).

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727. ——— Concrete tanks for oil. Petroleum Age, vol. 5, Sept., 1918. pp. 281–282. Discusses the advantages of this type of tank, mentions a few important details of construction, and describes typical installations in the oil fields. *See also* booklet by Portland Cement Association, "Concrete Tanks for Oil Conservation," Chicago, 1918. 19 pp.

728. ——— Oil storage in concrete tanks. Concrete, vol. 12, March, 1918, pp. 87–88. Gives advantages of concrete tanks and essential features of successful oil-tank construction.

729. ——— Use of concrete storage for oil. Nat. Petroleum News, vol. 10, Oct. 9, 1918, pp. 16, 18; Oil, Paint and Drug Rep., vol. 94, Oct. 14, 1918, p. 11. Extracts from address before the Independent Oil Men's Association.

730. National Petroleum News. Drain and cesspool new concrete tank features. Vol. 10, Jan. 2, 1918, p. 24. Describes drain of two-inch farm tile around the bottom of the outside walls of the tanks, and a cesspool located at one corner into which the drains empty.

731. National Petroleum News. New concrete oil tank holds 375,000 barrels. Vol. 10, Jan. 30, 1918, p. 12. Describes prominent features and points of construction of a crude oil tank at Gainesville, Tex.

732. Petroleum Age. Big concrete tank. Vol. 5, March, 1918, p. 76. Description of tank built by the Empire Pipeline Company at Gainesville, Tex., emphasizing its unique features.

733. Portland Cement Association. Concrete tanks for oil conservation. Chicago, 1918. 19 pp. Discusses the advantages of concrete tanks, fundamentals of construction and design, and describes typical installations, giving a list of companies using concrete containers for both heavy and light oils. Partially quoted in article, by J. E. Freeman, Concrete tanks for oil, Petroleum Age, vol. 5, September, 1918, pp. 281–282. *See* No. 727.

734. Power. Buried storage tanks. Vol. 48, Oct. 8, 1918, p. 540. Short description of cylindrical tanks of 15,000 gal. capacity buried with tops 2 feet below ground level, for storing fuel oil for generating-plant engines.

#### PATENT.

735. Nicholson, J. B. Oil tank. Canadian patent 187,493, Nov. 19, 1918; filed Aug. 8, 1918.

*See also* No. 716.

## RESERVOIRS (422).

*See* No. 716.

Earthen, *see* Nos. 150, 748; Concrete-lined, *see* Nos. 150, 716.

## TANK AND RESERVOIR EQUIPMENT (424).

PATENTS.

736. **Bowles, W. M.** Safety-vent for oil-storage tanks. United States patent 1,265,877, May 14, 1918.

737. **Bradshaw, J. A.** Strainer for gasolene tanks. United States patent 1,253,927, Jan. 15, 1918.

738. **Clifford, Victor.** Method of sealing oil-storage tanks. United States patent 1,266,407, May 14, 1918.

739. **Davis, Augustine, jr., and Betts, A. L.** Emergency shut-off valve for tanks. United States patent 1,284,063, Nov. 5, 1918.

740. **Farr, F. G.** Controlling-valve for hydraulic oil-delivery systems. United States patent 1,286,971, Dec. 10, 1918.

741. **Kramer, A. A.** Vent cap or plug for oil or like tanks. United States patent 1,258,915, Mar. 12, 1918.

742. **Merrill, G. W.** Means for sealing storage tanks. United States patent 1,266,843, May 21, 1918.

743. **Woodward, W. E.** Outside-operated tank valve. United States patent 1,282,351, Oct. 22, 1918.

*See also* Nos. 716, 749.

## TEMPORARY AND SMALL CONTAINERS (425).

PATENTS.

744. **Borysewski, Joseph, jr.** Gasoline tank. Canadian patent 182,149, Feb. 12, 1918. Filed Dec. 6, 1917.

745. **Heath, A. D.** Apparatus for transporting volatile liquids. United States patent 1,286,310, Dec. 3, 1918. Shipping cask.

746. **Peters, G. E.** Container for hydrocarbon oils. United Stated States patent 1,262,386, Apr. 9, 1918. Small container.

### EQUIPMENT (425.1).

PATENT.

747. **Weil, S. S.** Apparatus for protecting volatile liquids. United States patent 1,283,384, Oct. 29, 1918. On small can.

Storage and Tank Farms, *see* No. 716.

## LOSSES (427).

748. **Bradley, O. U.** Losses of crude oil in steel and earthen storage. Bull. Am. Inst. Min. Eng., July, 1918, pp. 1135–1139. Discusses losses by evaporation, sediment, water, and leakage, giving records of losses of Cushing and Healdton stored oil.

749. **Grebel, A.** Système de flotteur réduisant les pertes par évaporation des liquides volatils emmagasinés dans des reservoirs. Génie Civil, t. 72, May 11, 1918, pp. 332–335. Reviews causes of loss by evaporation and means of prevention of such losses, describing a system that has been used successfully.

750. **National Petroleum News.** Apply new system to large storage. Vol. 10, Jan. 16, 1918, p. 34. Describes the system of F. G. Farr, which prevents the evaporation of oil and gasoline stored in large above-ground field tanks by preventing air from coming in contact with it, thus eliminating loss and fire risk. (*See also* No. 589, 1917 bibliography.)

**751.** Scientific American. Storing gasoline in closed tanks. Vol. 118, Jan. 5, 1918, pp. 24–25. Discusses evaporation losses of stored oil and explains the Farr system of storage.

*See also* Nos. 324, 693, 716, 718, 719, 738, 740, 742.

Records, Statistics, and Maps, *see* No. 92; Financial, costs, *see* No. 716.

## MEASUREMENT OF VOLUMES AND WEIGHTS, GAGING AND METERING (430).

**752.** Ackerman, W. M. Measurement of natural gas in large quantities. Am. Gas Eng. Jour., vol. 108, May 18, 1918, pp. 465–470. Discusses briefly the various types of meters used for measuring high-pressure natural gas in large quantities, and describes at greater length the orifice meter, giving its advantages and disadvantages.

**753.** Anderson, A. H. Measurement of air and gases by the Pitot tube. Power Plant Eng., vol. 22, Feb. 1, 1918, pp. 125–127. Explanation of the use of the tube and tables to simplify calculations.

**754.** Glass, E. E. Charts give contents of cylindrical tanks without computation. Eng. News-Rec., vol. 81, Oct. 3, 1918, p. 642. For finding U. S. gallons of liquid remaining in a horizontal cylindrical tank when depth of liquid is known.

**755.** Hickstein, E. O. Determining the most satisfactory formula for measuring the flow of natural gas through pipe lines. Am. Gas Eng. Jour., vol. 108, Feb. 2, 1918, pp. 101–102. Discusses three formulas now in use, shows the variation among them, selects the most reliable and expresses this one in what the writer has found the most convenient form.

**756.** Rinehart, F. C. Gaging oil tanks. Petroleum Age, vol. 5, Dec., 1918, p. 392. A few of the problems of tank strapping.

**757.** Strohm, R. T. Calculating the contents of oil tanks. Power, vol. 47, Jan. 22, 1918, pp. 123–124. Gives method for finding the contents of cylindrical steel shells with bumped heads.

**758.** Szabo, Franz. Finding the contents of a horizontal cylindrical tank. Power, vol. 48, Aug. 20, 1918, pp. 266–67. Gives alignment chart.

**759.** Ward, M. W. Volumes of cylindrical tanks. Power, vol. 48, July 30, 1918, pp. 159–160. Method of finding the quantity of liquid at any depth in cylindrical tanks set horizontally.

**760.** Westcott, H. P. Measurement of gas by orifice meter. Metric Metal Works Erie, Pa. 408 pp. Contains pressure extension tables from 29 inches vacuum to 500 pounds pressure. Treats of the measurement of gas by orifice meter and Pitot tube, types of orifice meter, their capacity and installation, the differential gage and coefficients.

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**762.** Bennett, W. G. Tank gage. United States patent 1,264,143, Apr. 30, 1918.

**763.** Davis, J. B. Measuring pump for oil and the like. United States patent 1,275,866, Aug. 13, 1918.

**764.** Decker, H. L. Liquid gage. United States patent 1,286,953, Dec. 10, 1918.

**765.** Duffy, C. H. Gasolene-measuring apparatus. United States patent 1,276,502, Aug. 20, 1918.

**766.** Fisher, J. P. Gas measuring device. United States patent 1,287,274, Dec. 10, 1918.

**767.** ——— Means for controlling orifice meters. United States patent 1,287,273, Dec. 10, 1918.

**768.** GROSS, J. J. Gage for gasoline tanks. Canadian patent 185,927, Aug. 6, 1918. Filed Jan. 11, 1918.

**769.** KOOP, P. G. Gasoline storage tank. United States patent 1,283,530, Nov. 5, 1918.

**770.** MASON, L. S. Tank level recorder. United States patent 1,251,679, Jan. 1, 1918.

**771.** MEREDITH, WYNNE. Apparatus for determining the volume of liquid in tanks. United States patent 1,261,262, Apr. 2, 1918.

**772.** MURPHY, L. Indicating liquid levels. English patent 116,878, Aug. 21, 1918. Application 7179, Apr. 29, 1918.

**773.** PARYZEK, L. J. Liquid depth or amount gage. United States patent 1,274,932, Aug. 6, 1918.

**774.** POTTER, D. R. Meter for measuring gas. United States patents 1,260,445, 1,260,575, March 26, 1918.

**775.** RITZ-WOLLER, O. C. Gasolene gage. United States patent 1,257,929, Feb. 26, 1918.

**776.** THEOBALD, T. O. Tank gage. United States patent 1,259,680, March 19, 1918.

**777.** WINDRIDGE, F. N. Indicating apparatus for gasolene tanks, etc. United States patent 1,253,324, Jan. 15, 1918.

*See also* Nos. 92, 694, 716, 1612.

## FIRE HAZARDS AND PREVENTION (440).

**778.** BOWIE, C. P. Extinguishing and preventing oil and gas fires. Bureau of Mines Bull. 170, 1918. 50 pp. Describes methods of extinguishing oil tank fires and oil and gas well fires, and discusses miscellaneous fire hazards and preventions.

**779.** THE BUREAU FOR THE SAFE TRANSPORTATION OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES. Report of the Chief Inspector, April, 1918. 95 pp. Report for the year 1917, giving statistics and other details of fires and losses from fire in the transportation of gasoline and other inflammable liquids.

**780.** DUNN, B. W. Oil fires, their occurrence and prevention. Oildom, vol. 8, May, 1918, pp. 292, 294, 296. Petroleum World, vol. 15, Aug., 1918, pp. 346–347. Quotes descriptions of oil fires from Bulletin 39 of the Bureau of Explosives.

**781.** MEIGS, C. H. The foam system for extinguishing oil fires. Oildom, vol. 8, Feb., 1918, pp. 56, 58. Explains principle and operation of system, giving formulas of solutions that have been effective.

**782.** PATTERSON, D. W. Efficacy of the foam system for extinguishing oil fires. Oil Trade Jour., vol. 9, May, 1918, pp. 127–128. Gives formulas, explanation of principle of the system, and brief accounts of fires on which it was used successfully.

**783.** PETERSEN, F. P. Few fires from natural-gas gasoline. Nat. Petroleum News, vol. 10, Feb. 6, 1918, p. 32. Discusses the extent to which safety measures and appliances have been used in handling this product, as shown by the fact that only two accidents of any seriousness have occured in connection with its transportation or manufacture.

**784.** PETROLEUM. Fire prevention and extinguishing devices being generally adopted valuable to trade. Vol. 4, Jan., 1918, pp. 93–94. Summary of report by the Underwriters' Laboratories, on oil-fire-prevention patents.

**785.** ———. Oil fires due to discharges of static electricity prevented. Vol. 5, May, 1918, pp. 39, 92. Describes methods of prevention.

**786.** PETROLEUM AGE. Beating oil fires. Vol. 5, May, 1918, p. 183. Description of Erwin fire foam system.

**787.** U. S. Interstate Commerce Commission. Regulations for the transportation of explosives and other dangerous articles by freight and express and specifications for shipping containers, prescribed under the Act of March 4, 1909 and section 15 of the Act to regulate commerce as amended. Revised July 15, 1918. Washington, 1918. 274 pp.

### PATENTS.

**788.** Cohen, Wolf. Oil-tank protector. United States patent 1,270,497, June 25, 1918.

**789.** Dodd, West. Lightning protector. United States patent 1,259,000, March 12, 1918.

**790.** Ellis, C. A. Fire-extinguishing apparatus. United States patent 1,287,928, Dec. 17, 1918.

**791.** Meigs, C. H. Fire-extinguishing apparatus. United States patent 1,282,905, Oct. 29, 1918.

**792.** Meigs, C. H., and Epps, F. A. Fire extinguishing. English patents 118,534, Oct. 23, 1918; application 18,148, Dec. 7, 1917; 119,949, Dec. 18, 1918; application 18,149, Dec. 7, 1917.

**793.** Patterson, W. D. Fire extinguishing. English patents 118,315, Oct. 16, 1918; application 11,923, Aug. 20, 1917; 118,533, Oct. 23, 1918; application 18,147, Dec. 7, 1917.

**794.** Schultz, W. C. Fire extinguisher. United States patent 1,260,818, March 26, 1918.

*See also* Nos. 132, 736, 747, 750, 784, 1673, 1715.

## LOCAL DISTRIBUTION (450).

**795.** Wyer, S. S. Elimination of discrimination in natural-gas rates by "readiness to serve" charges. Proc. Nat. Gas Assoc. of Am., vol. 10, 1918, pp. 51–66; discussion, pp. 66-78, Nat. Gas and Gasoline Jour., vol. 12, July, 1918, pp. 251–256; discussion, pp. 256–262; Gas Record, vol. 13, May 22, 1918, pp. 351–353. Defines the readiness-to-serve charge, discusses its function of eliminating discrimination in natural gas rates, and sums up its advantages.

### PATENT.

**796-797.** Hancock, John. Oil-dispensing plant. United States patent 1,287,004, Dec. 10, 1918.

*See also* No. 1612.

Legislation and Regulation, *see* No. 787; Financial, 795.

# PROPERTIES AND THEIR DETERMINATION (500).

798. Hicks, J. A. Laboratory book of mineral oil testing. London, Charles Griffin & Co., 1918. 3rd ed., revised. 93 pp.

799. Upton, G. B. The properties of oils. Sci. Am. Suppl., vol. 85, June 1, 1918, pp. 348–350. Various tests are described, such as acidity test, surface tension, carbon residue, ash, volatility, oxidation, density, heat, flash and burning points, viscosity, etc.

*See also* Nos. 2, 918, 929, 931.

## PHYSICAL PROPERTIES (510).

*See* No. 1240.

## OPTICAL PROPERTIES (512).

800. Fryer, P. J., and Weston, F. E. The optical dispersion of oils from an analytical point of view. Analyst, vol. 43, Sept., 1918, pp. 311–316. Discussion, pp. 316–317. Includes figures obtained for a few commercial hydrocarbons, such as petroleum naphtha, paraffin oil, solar oil, benzol, toluol, xylol, and turpentine.

801. Scott, James. Petroleum under the microscope. 9. The relationship of oil and salt. 10. The carburetion of petrol: The minute formation of soot. 11. The evidence of foraminifera, polycistina and diatoms. 12. Diesel engine lubrication; mineral versus compound oil. 13. Sugar substitute from oil. 14. Oil-sulphur extraction by cupric oxide. 15. Some unrefined compounds. 16. The theory of inorganic origin. 17. Carbon curiosities. 18. Asphalte. 19. Hydrogen. Petroleum World, vol. 15, Jan., 1918, pp. 16–17; Feb., pp. 74–75; March, pp. 112–113; April, pp. 153–154; May, pp. 196–197; June, pp. 236–237; July, pp. 282–283; Aug., pp. 335–336; Sept., pp. 378–379; Oct., pp. 422–423; Nov., pp. 465–467.

### REFRACTIVITY (512.1).

802. Le Bas, Gervaise. A study of the refractivities of saturated and unsaturated compounds. II. The cycloparaffins and derivatives. Trans. Faraday Soc., vol. 13, June, 1918, pp. 414–419. Jour. Chem. Soc., vol. 114, II, Sept., 1918, p. 281.

## DENSITY (513).

803. Hurlburt, E. N. Gravity and temperature tables for mineral oils. Taylor Instrument Co., Rochester, N. Y., 1918, 204 pp.

804. Reilly, Joseph, and Rae, W. N. Density of liquids. Science Progress, vol. 12, 1918, pp. 428–438. A study of the methods used in determining density.

*See also* Nos. 252, 329, 799, 871, 872, 888, 897, 913, 1294.

## THERMAL PROPERTIES (514).

805. Rey, Jean. Diagramme entropique du pétrole. Compt. rend., t 166, Mar. 4, 1918, pp. 387–390. Deals particularly with the laws of vaporization as applied to petrol. Chem. Abs., vol. 12, June 10, 1918, p. 1249.

*See also* No. 799.

## SPECIFIC HEAT AND LATENT HEATS.

**806.** LAGERLOF, DANIEL. [Thermochemical studies. A simplified formula for the easier calculation of the molecular latent heats of vaporization, with tables.] Jour. prakt. Chem., Jahrg. 98, 1918, pp. 136–142. Chem. Abs., vol. 13, Aug. 10, 1919, p. 1666. Gives formula and tells of its successful use in calculations for many hydrocarbons.

*See also* Nos. 878, 913.

## BOILING POINTS AND VAPOR PRESSURES, EVAPORATION, VOLATILITY, FRACTIONAL DISTILLATION (514.2).

**807.** ANFILOGOFF, N. A. Distillation test of petrol. Jour. Soc. Chem. Ind., vol. 37, Jan. 15, 1918, pp. 21T–22T. Describes the author's method of testing, which is a modification of the Redwood method, and which, it is claimed, gives to the manufacturer and consumer alike at a glance a good idea of the yields of distillate below certain temperatures of boiling. A table is given of comparative tests of various grades of petrol in use, distillation being carried out by (1) Young's dephlegmator, (2) the Redwood method, and (3) the author's method.

**808.** EDWARDS, ALFRED. Note upon apparatus for the determination of boiling points. Jour. Soc. Chem. Ind., vol. 37, Jan. 31, 1918, p. 38T. Describes apparatus in which the thermometer stem is fully immersed, the inner current of vapor protected from drafts by a jacket of vapor, a steady temperature maintained, and in which there are other advantages over former designs.

**809.** LE BAS, GERVAISE. Boiling points of the paraffins. Chem. News, vol. 117, July 19, 1918, pp. 241–242. Discusses the relation between boiling point and chemical constitution.

**810.** NATIONAL PETROLEUM NEWS. Seek uniform way of testing gasoline. Vol. 10, May 1, 1918, pp. 22, 24. Gives chart showing eight distillation tests made by different chemists interested in uniform methods of testing petroleum products on the same sample of 58 gasoline.

*See also* Nos. 849, 856, 862, 868, 871, 873, 876, 879, 897, 913.

## MELTING POINTS, CRYSTALLIZATION, COLD TESTS, CONGEALING POINT (514.3).

**811.** BERGEL, E. [Theory of the process of crystallization in the manufacture of paraffin wax.] Petroleum Ztschr., Jahrg. 14, 1918, pp. 173–177. Chem. Zentralb., Jahrg. 90, 1919, II, pp. 122–123. Jour. Soc. Chem. Ind., vol. 38, May 15, 1919, p. 278A.

**812.** DUPRÉ, F. [Device for determining the dropping point (melting point) of fats, waxes, paraffin wax, and especially bitumens.] Chem. Ztg., Jahrg. 42, 1918, p. 398. Jour. Soc. Chem. Ind., vol. 37, Oct. 31, 1918, p. 615A. Jour. Chem. Soc., vol. 114, II, Oct., 1918, p. 376.

**813.** ——— [Valuation of natural and artificial bitumens for insulating cables by means of a new "bitumen tester."] Chem. Ztg., Jahrg. 42, 1918, pp. 445–446. Jour. Soc. Chem. Ind., vol. 37, Nov. 15, 1918, p. 645A. Discusses the improvement of ordinary bitumens, asphalts, pitches, etc., so as to raise their melting point, while retaining their elasticity and ductility, thus making them more suitable for use as insulators for electric cables.

**814.** HIBBERT, J. C., AND THOMPSON, W. F. An improved melting-point apparatus. Analyst, vol. 43, June, 1918, p. 216. Brief description, with sketch.

**815.** MANSBRIDGE, W. Notes on oil pitch. Jour. Soc. Chem. Ind., vol. 37, June 29, 1918, pp. 182T–185T. Describes various kinds of pitch, including that made from mineral oil, and gives methods used in commercial testing and analysis of pitches. Suggests scheme of analysis when dealing with samples of unknown origin. Abstract in Jour. Soc. Chem. Ind., vol. 37, March 30, 1918, p. 110R.

816. U. S. Bureau of Standards. Melting points of chemical elements, and other standard temperatures. Circular 35, 3d edition, revised, July, 1918.

*See also* Nos. 864, 888, 897, 913, 1294.

## LUBRICATING VALUE (515).

817. Battle, J. R. How to demonstrate value of lubricants for cutting metals. Nat. Petroleum News, vol. 10, Oct. 16, 1918, pp. 50, 52, 54. Describes tests.

818. Boys, C. V. The physical significance of hardness and oiliness. Presidential address delivered before the Physical Society of London. Proc. Phys. Soc., vol. 30, 1918, pp. 83–93. Discusses the lubricating property or "oiliness" of an oil.

819. Conradson, P. H. Emulsification of mineral lubricating oils. Power, vol. 48, Oct. 29, 1918, pp. 649–650. Describes simple apparatus and method for determining emulsibility and demulsification of lubricating oils.

820. ——— Internal combustion engine: lubrication and lubricants. Proc. Am. Soc. Test. Materials, vol. 18, part 2, 1918, pp. 388–392; Nat. Petroleum News, vol. 10, July 17, 1918, pp. 68, 70–71; Petroleum Rev., vol. 39, Aug. 10, 1918, pp. 85–86; Int. Marine Eng., vol. 23, Sept., 1918, pp. 533–534; Power, vol. 48, July 16, 1918, p. 107; Petroleum Age, vol. 5, Dec., 1918, pp. 390A–390B, Jour. Am. Soc. Naval Eng., vol. 31, Feb., 1919, pp. 182–184; Mech. World, vol. 64, Oct. 8, 1918, p. 185. Discusses essential factors to be considered in the selection of proper lubricants for internal combustion engines.

821. Motorship. Lubrication of marine heavy-oil engines. Vol. 3, Aug., 1918, pp. 9–10, 13–15. Includes discussion of the necessary properties of lubricating oils for this purpose.

822. Oelschläger, E. [The viscosity of lubricating oils.] Ztschr. Ver. Deut. Ing., Jahrg. 62, July 6, 1918, pp. 422–427. Jour. Am. Soc. Mech. Eng., vol. 40, Dec., 1918, p. 1049. Science Abs., vol. 21, Sec. B, part 9, Sept. 30, 1918, pp. 320–321. Jour. Soc. Chem. Ind., vol. 38, April 15, 1919, pp. 213A–214A.

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*See also* Nos. 828, 831, 832, 833, 854, 884, 885, 897, 917, 918, 920, 1294, 1642, 1643, 1645–1651, 1653–1655, 1657, 1659–1661, 1664.

## OTHER PROPERTIES OF LIQUIDS (518).

824. Bancroft, W. D. Outline of colloid chemistry. I. Jour. Franklin Inst., vol. 185, Jan., 1918, pp. 29–57. Contains discussions of the following subjects: Adsorption of gases and vapors by solids; catalytic action of solids on gases; adsorption of gases and vapors by liquids; adsorption of liquids by solids; adsorption of solids by solids; adsorption of liquids by liquids; and adsorption of solids by liquids. In the last discussion, a table is given showing adsorption of various solids by benzene, kerosene and paraffin oil.

825. ———. Outline of colloid chemistry. II. Jour. Franklin Inst., vol. 185, Feb., 1918, pp. 199–230. Discusses the following: Adsorption from solution by solid; the adsorption isotherm; abnormal adsorption; negative adsorption; reversibility of equilibrium; specificity of adsorption; adsorption of several solutes; adsorption from solution by liquid; adsorption and surface tension; Brownian movements; coalescence of liquids; coalescence of solids; plasticity.

826. Dieterich, K. ["Dracorubin" and "dracorubin capillary" tests for identifying and differentiating colorless liquids.] Ber. Deut. Pharm. Gesell., Jahrg. 28, 1918, pp. 449–492. Jour. Soc. Chem. Ind., vol. 38, May 15, 1919, p. 306A.

827. Dubrisay, R. L'essai des huiles de graissage. (Testing lubricating oils.) Annales Falsif, t. 11, Sept.-Oct., 1918, pp. 309–310. Jour. Soc. Chem. Ind., vol. 38, Jan. 15, 1919, p. 4A. Reply to Nicolardot and Masson. *See* No. 832.

**828.** Dunstan, A. E., and Thole, F. B. Relation between viscosity and the chemical constitution of lubricating oils. Jour. Inst. Petroleum Tech., vol. 4, June, 1918, pp. 191–216; discussion, pp. 216–228. Petroleum Rev., vol. 38, April 20, 1918, pp. 245–246; April 27, pp. 267–268. Jour. Soc. Chem. Ind., vol. 37, April 30, 1918, p. 152R. (Abstract.) June 15, 1918, pp. 281A–292A (Advance proof). Bibliography, pp. 215–216, "excluding well-known treatises."

**830.** Lidstone, F. M. A modified mercurial viscometer for determining the viscosity of volatile liquids. Jour. Soc. Chem. Ind., vol. 37, May 31, 1918, pp. 148T–149T. Chem. Abs., vol. 12, Sept. 10, 1918, pp. 1713–1714. Describes an attachment to be placed on a viscometer previously described (see Jour. Soc. Chem. Ind., vol. 36, March 15, 1917, pp. 270–272), so as to render the viscometer adaptable to the testing of liquids of high vapor tension.

**831.** Nicolardot, Paul, and Baume, G. [A contribution to the study of the viscosity of lubricating oils.] Chimie et Industrie, t. 1, 1918, pp. 265–271. Chem. Abs., vol. 12, Dec. 10, 1918, p. 2685. A critical study of various methods and kinds of apparatus.

**832.** Nicolardot, Paul, and Masson, P. J. La méthode de M. Dubrisay pour l'essai des huiles de graissage. (Dubrisay's method of testing lubricating oils.) Annales Falsif., t. 11, Mar.–Apr., 1918, pp. 77–79. Jour. Soc. Chem. Ind., vol. 37, Sept. 16, 1918, p. 499A. Criticism of Dubrisay's method of determining viscosity set forth in Annales Falsif., t. 10, 1917, pp. 301–304. (See No. 652, 1917 Bibliography.) For Dubrisay's reply to this, see No. 827.

**833.** Scientific American Supplement. Viscosity and constitution of lubricating oils. Vol. 86, Oct. 12, 1918, p. 240. Reviews conclusions of various experimenters.

*See also* Nos. 249, 799, 819, 822, 851, 860, 861, 863, 866, 867, 875, 876, 882, 888, 893, 897, 908, 913, 1115, 1294, 1614, 1643, 1665.

## OTHER PROPERTIES OF SOLIDS (519).

**834.** Kawakami, K. Method for measuring the coefficient of expansion of pitch, asphaltum, and similar substances. Jour. Chem. Ind., Tokyo, vol. 21, 1918, pp. 107–112. Jour. Soc. Chem. Ind., vol. 37, Aug. 31, 1918, p. 458A. Chem. Abs., vol. 12, Sept. 10, 1918, p. 1715.

*See also* Nos. 1, 813, 815, 824, 825, 847, 850, 857, 888, 889, 891.

## CHEMICAL PROPERTIES (520).

**835.** Fryer, P. J., and Weston, F. E. Technical handbook of oils, fats, and waxes. Vol. 2. Cambridge University Press, 1918, 314 pp. Practical and analytical. Vol. 1 published in 1917. (*See* No. 659, 1917 Bibliography.)

*See also* No. 1240.

## THERMOCHEMICAL PROPERTIES (521).

*See* Nos. 799, 816.

### FLASH AND BURNING POINTS, IGNITION POINTS, AND IGNITION MIXTURES (521.1).

**836.** Heldt, P. M. Ignition temperature of gaseous mixtures. Automotive Industries, vol. 38, Apr. 11, 1918, pp. 738–739. Defines ignition temperature and describes four methods of determining it experimentally.

**837.** Payman, W. The dangers of explosion with inflammable liquids and vapours. Jour. Soc. Chem. Ind., vol. 37, Nov. 15, 1918, pp. 406R-408R. Discusses dangers of this sort in common industrial operations, considering (1) the volatility of the liquid, (2) the range of explosion of the vapour when mixed with air, (3) the speed of propagation of the flame in the mixtures with air, and (4) the ease of ignition of the mixtures. Includes table of limits of inflammability of various substances, including petroleum, benzine, and gasoline.

*See also* Nos. 858, 880, 883, 897, 903, 913, 1294.

### CALORIFIC POWER AND CALORIMETRY (521.2).

**838.** Bayard, H. T. Table of heat values of fuel compiled for trade. Petroleum, vol. 5, May, 1918, p. 85. Shows, for fuels with gravities from 10 to 70, specific weight per gallon, heating value per pound, and heating value per gallon.

**839.** Poole, Herman. The calorific power of fuels: With a collection of auxiliary tables and tables showing the heat of combustion of fuels, solid, liquid, and gaseous. 3d ed., rewritten by R. T. Kent. New York, John Wiley & Sons, Inc., 1918. 267 pp.

*See also* Nos. 843, 904, 921, 1294.

### ILLUMINATING POWER, BURNING QUALITIES, AND PHOTOMETRY (521.3).

**840.** McBride, R. S., Dunkley, W. A., Crittenden, E. C., and Taylor, A. H. Influence of quality of gas and other factors on the efficiency of gas-mantle lamps. Bureau of Standards Tech. Paper No. 110, 1918. 49 pp. Includes (pp. 35–36) data on the efficiency of natural gas in various kinds of lamps.

Thermal Decomposition or Cracking, *see* No. 876.

### HEATS OF COMBUSTION, HEAT OF FUSION, ETC. (521.9).

**841.** Vliet, E. B. Energy theory of matter. Chem. News, vol. 117, March 8, 1918, pp. 118–119. Calculation of heats of combustion of unsaturated compounds.

**842.** Von Kozicki, G., and von Pilat, S. (Heat of fusion of paraffin wax.) Chem. Ztg., Jahrg. 42, 1918, p. 147. Jour. Soc. Chem. Ind., vol. 37, Nov. 30, 1918, p. 681A. Chem. Abs., vol. 13, May 10, 1919, p. 1015.

## ELEMENTARY ANALYSES (523).

*See* Nos. 877, 1294.

### SULPHUR (523.2).

**843.** Blount, Bertram. Estimation of sulphur in petrol. Calorific value of petrol. Analyst, vol. 43, March, 1918, p. 89. Notes recommending the Carius method for the determination of sulphur and the use of the bomb for measuring calorific value.

**844.** Marcusson, J. [Sulphur and oxygen compounds in mineral oils.] Mitt. k. Materialprüf., 1917, pp. 374–380; Ztschr. angew. Chem., Jahrg. 31, II, 1918, p. 62; Jour. Soc. Chem. Ind., vol. 37, June 29, 1918, pp. 329A–330A; Chem. Abs., vol. 12, Nov. 20, 1918, p. 2435.

*See also* No. 252.

Analytical Numbers (Iodine, Bromine, Saponification, etc.), *see* No. 873.

## HYDROCARBONS, HYDROCARBON DERIVATIVES (525).

### OXYGEN COMPOUNDS (525.1).

*See* No. 873.

Petroleum Acids and Acid Content, *see* Nos. 876, 1294, 1664.

Water and Solid Impurities, Sand, B. S., etc., *see* No. 1665.

## DETECTION OF MIXTURES AND ADULTERANTS (528).

**845.** Fuchs, F. C. Modification of benzene method for water determination in mineral oils. Eng. Min. Jour., vol. 106, Aug. 24, 1918, p. 357.

**846.** Prather, P. W. Note on the separation of mineral oil from saponifiable oil. Chemist-Analyst, No. 26, July, 1918, p. 19. Method for destroying the emulsion formed after shaking the soap solution with ether in a separatory funnel.

*See also* Nos. 864, 869, 874.

## MISCELLANEOUS AND SPECIFIC TESTS (529).

**846a.** Marcusson, J. [Soap content of refined mineral oils.] Mitt. k. Materialprüf., Jahrg. 36, 1918, pp. 279–280. Jour. Soc. Chem. Ind., vol. 38, July 15, 1919, p. 453A, Chem. Abs., vol. 13, Dec. 10, 1919, pp. 3312–3313. Describes gravimetric method of determining soap content.

**846b.** Schwarz, F. [Determination and fractionation of paraffin wax by means of butanone.] Mitt. k. Materialprüf., Jahrg. 36, 1918, pp. 241–248. Jour. Soc. Chem. Ind., vol. 38, July 15, 1919, p. 453A, Chem. Abs., vol. 13, Dec. 10, 1919, p. 3313. Describes method based on the observation that a hot solution of mineral oil in methyl ethyl ketone (butanone) yields a deposit of paraffin wax on cooling.

**846c.** Krieger, A. [Testing illuminating-oil substitutes.] Jour. Gasbel., Jahrg. 61, 1918, pp. 220–221. Chem. Abs., vol. 14, Jan. 20, 1920, p. 219.

Physiological Properties, *see* No. 917.

## ANALYTICAL AND TESTING METHODS. DETERMINATION OF PHYSICAL AND CHEMICAL PROPERTIES. APPARATUS AND PROCEDURE (540).

**847.** American Society for Testing Materials. A. S. T. M. standards. Issued triennially. 1918. Published by the Society, Philadelphia, Pa. 908 pp.

**848.** ——— Standard method for distillation of bituminous materials suitable for road treatment. A. S. T. M. Standards, 1918, pp. 669–672.

**849.** ——— Standard test for loss on heating of oil and asphaltic compounds. A. S. T. M. Standards, 1918, pp. 635–636.

**850.** ——— Standard test for penetration of bituminous materials. A. S. T. M. Standards, 1918, pp. 632–634.

**851.** ——— Standard test for soluble bitumen. A. S. T. M. Standards, 1918, pp. 630–631.

**852.** ——— Proceedings. Proposed revision in the standard method for distillation of bituminous materials suitable for road treatment. Vol. 18, part 1, 1918, pp. 331–332. Appendix 1 to Report of Committee D–4 on road materials.

**853.** ——— Report of Committee D–1 on preservative coatings for structural materials. Vol. 18, part 1, 1918, pp. 297–298.

**854.** ——— Report of Committee D–2 on lubricants. Vol. 18, part 1, 1918, pp. 321–322.

**855.** ——— Report of Committee D–4 on road materials. Vol. 18, part 1, 1918, pp. 326–330.

**856.** ——— Report of Sub-Committee on evaporation tests. Vol. 18, part 1, 1918, pp. 323–325. Appendix to report of Committee D-2 on lubricants. Results of investigation to work out a satisfactory method and apparatus or air bath.

**857.** ——— Tentative method for determination of softening point of bituminous materials other than tar products. Vol. 18, part 1, 1918, pp. 707–708. Describes ring-and-ball method.

**858.** ——— Tentative test for flash point of paint thinners other than turpentine. Vol. 18, part 1, 1918, pp. 685–688.

**859.** Anderson, R. P. Reagents for use in gas analysis. VII. The determination of benzene vapor. Jour. Ind. and Eng. Chem., vol. 10, Jan., 1918, pp. 25–26. Gives summary of work previously done along this line, and presents a new method for benzene determination which is simpler and quicker than other methods.

**860.** Battle, J. R. Expert shows how to make lubricating test. Nat. Petroleum News, vol. 10, Apr. 17, 1918, pp. 61–63. Describes tests to be used in determining the oil which gives the greatest efficiency in reciprocating engines.

**861.** Bingham, E. C. The variable pressure method for the measurement of viscosity. Proc. Am. Soc. Test. Materials, vol. 18, part 2, 1918, pp. 374–383; discussion, pp. 384–386. Sums up difficulties encountered in measuring viscosity by the pendulum method and by the capillary tube method, and points out the very marked advantages to be derived from modifying the present capillary tube viscosimeters so as to use variable pressures.

**862.** Dean, E. W. A convenient electric heater for use in the analytical distillation of gasoline. Jour. Ind. and Eng. Chem., vol. 10, Oct., 1918, pp. 823–826. Discusses the general requirements for methods of heating in the analytical distillation of gasoline, shows the disadvantages of flame heaters, and describes in detail an electric heater used in the Bureau of Mines.

**863.** Engineering. Viscosity determination in absolute units. Vol. 105, June 14, 1918, p. 655. Discusses the unsatisfactory character of present methods of viscosity determination and the evident necessity for expressing results in absolute units. Describes the Redwood, Engler, and Saybolt instruments and discusses the difficulties in their use. Reviews the papers of W. F. Higgins and W. H. Herschel on this subject. *See* Bureau of Standards Tech. Paper No. 100, 1917, by W. H. Herschel.

**864.** Formánek, J., Knop, J., and Korber, J. [Examination of light petroleums and benzenes.] Chem. Ztg., Jahrg. 41, 1917, pp. 713–714, 730–731. Jour. Chem. Soc., vol. 112, II, pp. 581–582. Chem. Abs., vol. 12, Aug. 10, 1918, p.1 596. Ztschr. angew. Chem., Jahrg. 31, 1918, Ref., pp. 62–63. Jour. Soc. Chem. Ind., vol. 37, June 29, 1918, p. 329A. Discusses the detection of aromatic hydrocarbons and of unsaturated hydrocarbons in benzine, and the solidification points of benzene hydrocarbons and benzine.

**865.** Gill, A. H. A short hand-book of oil analysis. Rev. 8th ed. Philadelphia and London, J. B. Lippincott Co., 1918. 209 pp.

**866.** Herschel, W. H. The standard Saybolt Universal viscosimeter. Proc. Am. Soc. Test. Materials, vol. 18, part 2, 1918, pp. 364–372. Discusses method for determining an equation giving the relation between the readings of certain Saybolt Universal viscosimeters and absolute viscosity. *See also* No. 867.

**867.** ——— The standardization of the Saybolt universal viscosimeter. Bureau of Standards Tech. Paper 112, 1918. 23 pp.

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**869.** Joseph, Thomas. The liquid sulphur dioxide method of determining aromatic hydrocarbon oils. Trans. Utah Acad. Sci., vol. 1, 1918, pp. 214–215. Abstract. Results of tests on gasolines, kerosenes, hexane, heptane, and specially prepared distillates of definite boiling point range.

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*See also* Nos. 1, 499, 579, 668, 804, 807, 808, 812, 814, 815, 819, 826, 827, 829, 830, 831, 832, 834, 839, 843, 844, 845, 846, 886, 893, 901, 905, 906, 907, 920, 921, 924, 1171.

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## POWER AND EFFICIENCY TESTS (550).

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**885.** Lentz, S. F. Methods of conducting tests of lubricants on internal combustion engines. Lubrication, vol. 5, July, 1918, pp. 4–9. Outlines points which are usually considered and which should be tabulated when judging the relative values of lubricants, such as duration of test, fuel consumption, lubrication system, lubricating oil consumed, etc.

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*See also* No. 1237.

## SPECIFICATIONS FOR PURCHASES, ETC. (560).

**887.** American Society for Testing Materials, Proceedings. Report of Committee D–8 on waterproofing. Vol. 18, part 1, 1918, pp. 347–348. Gives tentative specifications.

**888.** ———. Tentative specifications for asphalt for use in damp-proofing and waterproofing. Vol. 18, part 1, 1918, pp. 630–633. Covers the following tests: Melting point, penetration, ductility, specific gravity, solubility in carbon bisulphide, loss on heating, ash.

**889.** American Society of Civil Engineers. Final report of the committee on materials for road construction and on standards for their test and use. Transactions, vol. 82, 1918, pp. 1384–1465; discussion, pp. 1466–1468. Includes definitions of terms in frequent use in highway work and detailed specifications and tests for bituminous materials, such as asphalt block, sheet asphalt, etc.

**890.** Automotive Industries. Specifications for Government oil. Vol. 39, Dec. 26, 1918, pp. 1127–1128. Specifications for the following oils and greases used in the different departments: Cylinder oil, transmission oil, non-fluid oil, medium cup grease, slushing oil.

**891.** Draney, J. R. Standardization of required consistency for asphalt. Canadian Eng., vol. 35, Oct. 3, 1918, pp. 309–310. Present variations and needed efficiency in penetration requirements.

**892.** Howard, J. W. Asphaltic and non-asphaltic road-oil specifications. Munic. Eng., vol. 54, June, 1918, p. 223. Enumerates general requirements of all road oils and suggests specifications for asphaltic and non-asphaltic oils.

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**895.** ——— Tentative specifications for airplane gasoline drawn up. Vol. 10, May 22, 1918, pp. 8–9. Gives specifications for three grades of gasoline for airplanes agreed upon by representatives of the refiners, the Fuel Administration, and the Army and Navy.

**896.** Oildom. Aviation gasoline specifications. Vol. 8, Aug., 1918, pp. 654, 656; Petroleum, vol. 5, Aug., 1918, pp. 104, 106; Oil Age, vol. 14, July, 1918, pp. 27–29; National Petroleum News, vol. 10, July 17, 1918, pp. 18, 20; Oil and Gas Jour., vol. 17, July 26, 1918, pp. 45, 50; Oil, Paint and Drug Rep., vol. 94, July 15, 1918, p. 67. Specifications adopted by the U. S. Fuel Administration, May 29, 1918, for aviation gasoline for export, domestic aviation gasoline, and fighting aviation gasoline.

**897.** STRATFORD, C. W. Standardized specifications for lubricating oils. Jour. Soc. Auto. Eng., vol. 2, Feb., 1918, pp. 142–147; Nat. Petroleum News, vol. 10, Mar. 20, 1918, pp. 18, 20, 22, 24, 26, 28; Aerial Age Weekly, vol. 7, Mar. 18, 1918, pp. 48–51. Discusses the need for standardized laboratory tests to determine the qualities and defects of oils brought out in actual service in the lubrication of internal combustion engines. Describes briefly the usual tests. Recommends specifications for lubricating oils for internal combustion engines based on the following five essential tests: Viscosity, cold test, boiling point range (vacuum distillation), oxidation test, and emulsion test, describing the method and apparatus for each. Gives a table of properties of representative American oils for use in internal combustion engines.

**898.** UNITED STATES FUEL ADMINISTRATION. Oil Division. Report of committee on standardization of petroleum specifications. Bull. No. 1, October, 1918. Washington, 1918, 11 pp.; Nat. Petroleum News, vol. 10, Oct. 16, 1918, pp. 26, 28, 30, 32; Oil and Gas Jour., vol. 17, Oct. 18, 1918, pp. 42, 44; Oil Age, vol. 14, Nov., 1918, pp. 26–28; Automotive Industries, vol. 39, Oct. 24, 1918, p. 728; Oildom, vol. 8, Nov., 1918, pp. 850, 852; Oil, Paint and Drug Rep., vol. 94, Oct. 14, 1918, p. 53; Jour. Soc. Auto. Eng., vol. 3, Dec., 1918, pp. 405–406. Gives specifications and tests for aviation gasoline (export, fighting, and domestic), for motor gasoline, and for fuel oil, gas oil, and bunker oil.

**899.** ——— Report of Committee on standardization of petroleum specifications. Bull. No. 2, Dec., 1918. 10 pp. Oil Age, vol. 15, Jan., 1919, pp. 32–36; Oil and Gas Jour., vol. 17, Jan. 3, 1919, pp. 50–52; Nat. Petroleum News, vol. 11, Jan. 1, 1919, pp. 34, 36, 38, 40, 42–43; Petroleum, vol. 6, Jan., 1919, pp. 25–26. Specifications for illuminating oils, drawn so as to allow these products to be made from any satisfactory crude petroleum, rather than from oil from any particular part of the United States. Includes specifications for water-white kerosene, long-time burning oil, 300-degree mineral seal oil, and signal oil.

*See also* Nos. 10a, 83, 250, 251, 292, 915.

## VARIOUS SPECIES AND FRACTIONS OF BITUMENS AND PETROLEUMS (570).

CRUDE OILS, *see* Nos. 293, 294, 296, 297, 330–338.

### GASEOUS PRODUCTS, INCLUDING NATURAL GAS (572).

**900.** ABRAMOVITZ, H. L. Chemistry of natural gas. Gas Rec., vol. 14, Aug. 28, 1918, pp. 101–102. An elementary outline of its origin, composition, and commercial application of natural gas.

**900a.** DEL CORRAL, J. I. Examen industrial de los gases combustibles naturales. Revista Soc. Cubana de Ingenieros, vol. 10, April, 1918, pp. 181–235. Fomento (Habana), año 1, vol. 1, March and April, 1918, pp. 259–269; July, pp. 313–336. Discusses composition, methods of analysis and testing, and uses of natural gas, also the manufacture of natural-gas gasoline.

**901.** ELLIS, W. H., BAIN, J. W., AND ARDAGH, E. G. R. The analysis of gases. Nat. Gas and Gasoline Jour., vol. 12, March, 1918, pp. 97–100. Study of special methods used in the analysis of natural gas, with description of apparatus and procedure.

**902.** MALISOFF, WILLIAM, AND EGLOFF, GUSTAV. Methane. Jour. Phys. Chem., vol. 22, Nov., 1918, pp. 529–575. Reviews results of research on methane to date, indicating the future possibilities of both practical and theoretical research on methane and giving necessary data and theoretical discussion leading to a series of papers on the research of the authors.

**903.** MASON, WALTER, AND WHEELER, R. V. The effect of temperature and of pressure on the limits of inflammability of mixtures of methane and air. Jour. Chem.

Soc., vol. 113, Jan., 1918, pp. 45–57. Abstract, Jour. Soc. Chem. Ind., vol. 37, March 15, 1918, p. 115A.

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**905.** Metallurgical and Chemical Engineering. Analysis of natural gases. Vol. 18, June 15, 1918, pp. 640–641. Quated from second edition of the U. S. Steel Corporation pamphlet, "Methods for the technical sampling and analysis of gases." *See* No. 907. Gives methods for various determinations.

**906.** Seibert, F. M., and Harpster, W. C. Use of the interferometer in gas analysis. Tech. Paper 185, U. S. Bureau of Mines, 1918. 18 pp. Results of investigations on mine gases and natural gas.

**907.** United States Steel Corporation. The methods of the United States Steel Corporation for the technical sampling and analysis of gases. 2nd edition, Pittsburgh, 1918. 60 pp. Differs from the first edition in the inclusion of methods of analysis of by-product and natural gases.

**908.** Wright, Robert. "Spark lengths" in hydrocarbon gases and vapors. Jour. Chem. Soc., vol. 113, Jan., 1918, pp. 79–80. Gives measurements for hydrogen, benzene, toluene, and several paraffin hydrocarbons.

*See also* Nos. 2, 293, 294, 296, 297, 668, 836, 837, 839, 859, 1169, 1171, 1173, 1214.

## VOLATILE FRACTIONS, INCLUDING MOTOR OILS, GASOLINES, NAPHTHAS, BENZINES (573).

**909.** Davidson, J. G. The formation of aromatic hydrocarbons from natural gas condensate. Jour. Ind. and Eng. Chem., vol. 10, Nov., 1918, pp. 901–910. A study of (1) the effect of catalyzers on the decomposition of straight-chain hydrocarbons of low molecular weight; (2) the influence of temperature and of pressure on the production of aromatic hydrocarbons; and (3) the formulation of the reaction whereby straight-chain hydrocarbons are converted into aromatic hydrocarbons.

**910.** Davis, H. S, and Davis, M. D. Studies on the absorption of light oils from gases. Jour. Ind. and Eng. Chem., vol. 10, Sept., 1918, pp. 718–724.

**911.** Gill, A. H. Gasoline and its dangers. Power, vol. 48, July 16, 1918, pp. 78–79. Reviews briefly the properties of gasoline and the dangers in handling it.

**912.** Gill, J. D. War status of gasoline and fuel oil. Jour. Eng. Club of Philadelphia, vol. 35, Sept., 1918, pp. 417–425. Characteristics and war uses of gasoline and fuel oil, present supply, substitutes, future possibilities, etc., are discussed.

**913.** Moore, H. Valuation of motor fuels. Automobile Eng., Sept., 1918, pp. 245–248. Jour. Soc. Chem. Ind., vol. 37, Nov. 30, 1918, p. 681A. Discusses the applicability of various tests now in use to mixed fuels such as will probably be used in the future.

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**915.** Rathbun, J. B. Aeroplane engine gasoline used by the Allies. Petroleum, vol. 5, October, 1918, pp. 175–176. Discusses the necessity for rigid specifications.

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Illuminating Oils, *see* No. 899.

## LUBRICATING, TRANSFORMER, AND SWITCH OILS (575).

**916.** Flight, W. S. Transformer oil. Electrician, vol. 81, Nov. 29, 1918, pp. 636–638; Dec. 6, pp. 664–667; Dec. 13, pp. 686–689.

917. Great Britain. Department of Scientific and Industrial Research. Advisory Council. Memorandum on cutting lubricants and cooling liquids and on skin diseases produced by lubricants. Bull. No. 2, London, 1918, 8 pp. Mech. World, vol. 64, Oct. 25, 1918, pp. 195–196; Nov. 1, pp. 207–208. Jour. Am. Soc. Naval Eng., vol. 31, Feb., 1919, pp. 256–262. Discusses the properties and functions of cutting lubricants and cooling liquids and factors to be considered in their selection.

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919. Pierron, L. [Lubricants and substitutes before and during the war.] Rev. chim. ind., t. 27, 1918, pp. 69–77. Chem. Abs., vol. 12, Oct. 10, 1918, p. 2044. General review and discussion.

920. Yates, R. F. The testing of lubricants. Am. Machinist. vol. 49, Aug. 15, 1918, pp. 289–291. Explains the various characteristics of lubricating oils and greases and how they may be tested with simple apparatus.

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## GAS AND FUEL OILS, ABSORPTION OILS, PETROLEUM RESIDUUMS (576).

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## ASPHALT, TARS, ETC. (578).

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*See also* Nos. 1, 2, 205, 813, 815, 848, 852, 853, 889, 891, 892, 893, 1093, 1594, 1614, 1617, 1620, 1690, 1703.

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*See also* Nos. 1, 205, 290, 293, 294, 295, 296, 448, 1690.

# REFINING AND REFINERIES (600).

## GENERAL.

927. **Burton, W. M.** Chemistry in the petroleum industry. Jour. Ind. and Eng. Chem., vol. 10, June, 1918, pp. 484–486; Oil, Paint and Drug Rep., vol. 93, May 27, 1918, p. 63; Petroleum, vol. 5, July, 1918, pp. 97–98, 100, 102, 104; Met. and Chem. Eng., vol. 18, June 15, 1918, pp. 647–650; Oildom, vol. 8, July, 1918, pp. 400, 402, 404. Reviews briefly the history of the industry in the United States, particularly in chemical research and refining, and gives brief account of the progress made in refining by the Standard Oil Company of Indiana.

928. **Campbell, Andrew.** Petroleum refining. London, C. Griffin and Co., Ltd., 1918. 297 pp. Foreword by Sir Boverton Redwood.

929. **Guttentag, W. E.** Petrol and petroleum spirits. A description of their sources, preparation, examination, and uses. Preface by Sir John Cadman. London, Edward Arnold, 1918. 135 pp.

930. **Hartmann, M. L.** The refining of petroleum. Pahasapa Quarterly, vol. 7, Feb., 1918, pp. 45–56. General description of processes and practices.

931. **Mailhe, Alph.** Revue de chimie organique. Rev. gén. sci., t. 29, July 30, 1918, pp. 430–442. Review of investigations in organic chemistry during the past two years, including hydrocarbon research and the production of gasoline and other petroleum products; research on alcohols, phenols and ether; aldehydes and acetones; and acids and nitrils.

932. **Miskell, P. M.** Oil refining and its methods. Doherty News, vol. 3, May, 1918, pp. 9–11; Oil and Gas. Jour., vol. 16, May 16, 1918, p. 46. A brief explanation for the layman of the principles of refining.

933. **Sadtler, S. P.** Advance in industrial organic chemistry since the beginning of the war. Chem. and Met. Eng., vol. 19, Oct. 1, 1918, pp. 556–560. Paper before the Fourth National Exposition of Chemical Industries, New York, Sept., 1918. Includes a brief review of the progress made by the petroleum industry.

934. **Stratford, C. W.** Petroleum refining. Jour. Soc. Automotive Eng., vol. 3, July, 1918, pp. 69–84; discussion, pp. 84–87. Brief review of the occurrence and distribution, physical characteristics, and chemical structure of petroleum in general, and an explanation of the various processes of refining and treatment of an oil of Pennsylvania grade. Very fully illustrated by photographs and diagrams.

*See also* Nos. 2, 12, 918, 1240.

## PROCESSES AND PRACTICES (610).

### DEHYDRATING AND CLEANING (611).

935. **Engineer.** Centrifugal oil reclaimers. Vol. 125, June 21, 1918, p. 541. Describes new and simple method of treatment using a patented "oil subsider" employing centrifugal force for separating foreign matter mechanically from oil.

936. **Oil Age.** New electric dehydrator. Vol. 14, Dec., 1918, pp. 12–14. Principle and advantages of the Davis-Perrett invention for dehydrating oil.

937. **Petroleum.** New dehydrating process makes great saving. Vol. 5, July, 1918, p. 24. Brief description of process invented by H. O. Ballard for dehydrating oil by steaming.

**938.** POWER. New oil separator. Vol. 48, Oct. 15, 1918, p. 567. Description, with diagram, of apparatus for separating oil of any gravity from water or other liquid impurities and cleansing it of foreign bodies, such as cotton waste.

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**939.** COLEMAN, B. G., AND MORRISON, R. O. Oil separator. United States patent 1,284,245, Nov. 12, 1918.

**940.** HARRIS, F. W. Process and apparatus for dehydrating emulsions (electrically). United States patent 1,281,952, Oct. 15, 1918.

**941.** HORNER, R. W. Process of and apparatus for removing water from oil. United States patent 1,284,343, Nov. 12, 1918.

**942.** JENSEN, J. O. Process of and apparatus for preparing crude oil for distillation. United States patent 1,268,721, June 4, 1918.

**943.** LEETE, H. C. Oil refining apparatus. United States patent 1,288,934, Dec. 24, 1918.

**944.** MCKIBBEN, C. W. Apparatus for separating liquids. United States patent 1,276,386, Aug. 20, 1918.

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**946.** PARKER PROCESS CO. Purification of crude petroleum. French patent 483,453, July 11, 1917.

**947.** POLLAK, R. R. Apparatus for dehydrating oil. United States patent 1,254,271, Jan. 22, 1918.

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## DISTILLATION OF LIQUIDS (612).

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**950.** MARILLER, C. La distillation fractionnée et la rectification. Paris, H. Dunod et E. Pinat, 1918. 492 pp.

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**951.** ADAM, W. G. Fractional distillation. English patent 112,966, Mar. 27, 1918. Application 18,671, Dec. 30, 1916.

**952.** FOSTER, A. B. Process and apparatus for distilling. United States patent 1,277,895, Sept. 3, 1918.

**953.** FURMAN, G. B. Sectional distillation apparatus. United States patent 1,265,318, May 7, 1918.

**954.** LAPP, C. E. Apparatus for refining mineral oils. United States patent 1,266,281, May 14, 1918.

**955.** LEPLEY, C. E. Process for the distillation of petroleum. United States patent 1,261,410, Apr. 2, 1918.

**956.** LORCH, H. D. Apparatus for refining mineral oils. United States patent 1,264,668, Apr 30, 1918.

**957.** MURRAY, T. E. Crude oil still. United States patent 1,273,523, July 23, 1918.

**958.** SHERMAN, L. O. Method of and apparatus for distilling petroleum and the like. United States patents 1,260,584, Mar. 26, 1918; 1,288,711, Dec. 24, 1918.

**959.** THOMAS, WALTER. Process of and apparatus for distilling oil and other liquids. United States patent 1,253,747, Jan. 15, 1918.

**960.** TRUMBLE, M. J. Process of treating petroleum. United States patent 1,262,875, Apr. 16, 1918.

961. WEICKEL, T. Method and plant for the distillation of tar, crude petroleum, resin, and similar materials. German patent 302,323, Jan. 16, 1917. Jour. Soc. Chem. Ind., vol. 37, July 15, 1918, p. 364A. Horizontal stills for tar distillation, etc., need not be walled in, if the fire gases approach and leave at the same region.

962-963. WRIGHT, E. H., AND ATWOOD, E. H. Process for fractionating liquids. United States patent 1,278,280, Sept. 10, 1918.

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965a. BRICKMAN, SAMUEL. Oil refining. United States patent 1,279,506, Sept. 24, 1918.

966. HAMMOND, T. C., AND RICHARDSON, C. K. Distilling and dehydrating tar, oil, etc. English patent 111,956, Feb. 6, 1918. Application 3,196, Mar. 5, 1917.

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970. PRICHARD, G. L. Process of distillation and apparatus therefor. United States patent 1,264,435, Apr. 30, 1918.

971. PYZEL, DANIEL. Dephlegmator and rectifying column. United States patent 1,276,690, Aug. 20, 1918.

971a. SNELLING, W. O. Refining apparatus. United States patent 1,259,679, Mar. 19, 1918.

972. TRUMBLE, M. J. Process for refining petroleums. United States patent 1,259,171, Mar. 12, 1918.

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## CRACKING OF LIQUIDS AND VAPORS (613).

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*See also* Nos. 11, 399, 400, 401, 403, 965.

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1050. Egloff, Gustav, and Morrell, J. C. Supply of oil available from shales. Oil and Gas Jour., vol. 17, Aug. 9, 1918, pp. 46–48; Aug. 16, pp. 42, 44–46; Aug. 23, pp. 45–48. Railroad Red Book, vol. 35, Oct., 1918, pp. 13–19; Nov., pp. 13–20. Discusses the relations of the various types of solids capable of giving up oil either by heat treatment or by the use of solvents; their possible mode of origin; their relation to other solid hydrocarbons and to petroleum; the economic distribution and treatment of oil shales; and the uses of their products. Gives numerous references to the literature on the subject.

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**1066.** Bilbrough, S. B. Distillation of coal, oil shales, and other similar carbonaceous materials. English patent 112,793, Mar. 20, 1918. Application 576, Jan. 11, 1917.

**1067.** Boyle, A. M. Apparatus for the extraction of hydrocarbon materials. United States patent 1,276,866, Aug. 27, 1918.

**1068.** Catlin, R. M. Apparatus for the treatment of shale or the like. United States patent 1,272,377, July 16, 1918.

**1069.** Crane, A. G. Process of extracting hydrocarbon materials from shale and similar earthy material. United States patent 1,276,879, Aug. 27, 1918.

**1070.** Day, D. T. Extraction of hydrocarbon products from shales and coal. United States patent 1,280,178, Oct. 1, 1918. Canadian patent 185,181, June 25, 1918. Filed Feb. 21, 1918.

**1071.** Erickson, E. T. Oil extracting and refining apparatus. United States patent 1,281,320, Oct. 15, 1918.

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**1073.** Heyl, G. E. Distilling shale. English patent 112,997, Mar. 27, 1918. Application 1,865, Feb. 6, 1917.

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**1075.** ———. Process for obtaining a distillate of shale free from sulphur. English patent 115,452, July 3, 1918. Application 4,249, Sept. 14, 1917.

**1076.** Hiller, H. K. Distillation of coal and other materials for the manufacture of motor gas and utilization of residual products. English patent 118,522, Oct. 23, 1918. Application 17,054, Nov. 20, 1917.

**1077.** Justice, P. M. Distilling shale, etc. English patent 115,573, July 10, 1918. Application 13,485, Sept. 19, 1917.

**1078.** Pearse, A. L. Destructive distillation. (Shale, coal, and lignite.) English patent 119,700, Dec. 11, 1918. Application 14,725, Oct. 11, 1917.

**1079.** Rogers, L. H. Method of and apparatus for treating oil shale (in situ). United States patent 1,269,747, June 18, 1918.

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**1082.** Walker, H. R. L., and Bates, W. R. Vertical retorts for distilling, carbonizing, roasting and the like of coal, carbonaceous and other material. (Shale, peat, and wood.) English patent 116,458, Aug. 8, 1918. Application 16,951, Nov. 17, 1917.

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## PEAT AND LIGNITE (614.2).

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**1089a.** VAN ECKE, C. Exploitation industrielle de la tourbe. Paris, Dunod et Pinat, 1918. 370 pp. Includes discussion of distillation processes and products.

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**1091.** TREVOR, S. R. Oil, gas, and fuel extraction from peat. New Zealand patent 39,543, Nov. 21, 1917.

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**1094.** EVANS, E. C. Aspects of the low temperature carbonization of coal. Jour. Soc. Chem. Ind., vol. 37, July 31, 1918, pp. 212T–219T; discussion, pp. 219T–220T.

**1094a.** WOLFF, ERNST. (Operating experiences in the manufacture of ammonium sulphate.) Jour. Gasbel., Jahrg. 61, 1918, pp. 577–580, 601–604. Chem. Abs., vol. 14, Feb. 10, 1920, p. 338. Describes small plant and methods of operation.

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## CONDENSATION (615).

PATENTS.

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**1097.** RICHARDSON, C. K. AND HAMMOND, T. C. Surface condensers; heat interchangers. English patent 111,961, Feb. 6, 1918. Application 3,689, Mar. 14, 1917.

**1098.** WRIGHT, E. H. AND ATWOOD, E. H. Fractional condensing heat exchanger. United States patent 1,278,279, Sept. 20, 1918. New Zealand patent 40,510, July 30, 1918. Canadian patent 186,831, Oct. 1, 1918. Filed April 10, 1918.

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*See* No. 877.

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1100. Hibbert, Harold. Glycols from oil gas. United States patent 1,270,759, June 25, 1918.

1101. Ruff, F. C. Purifying gasoline fractions containing aromatic hydrocarbons. United States patent 1,263,289, Apr. 16, 1918.

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### HYDROGENATION, HALOGENATION, NITRATION, AND CATALYSIS (616.11).

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1113. Rostin, H. Treating unsaturated hydrocarbons. Danish patent 22,824, Feb. 18, 1918.

*See also* Nos. 1128, 1201, 1215.

### SULPHURIC AND SULPHUROUS ACID REFINING (616.12).

**1114.** BROOKS, B. T., AND HUMPHREY, IRWIN. The action of concentrated sulphuric acid on olefins, with particular reference to the refining of petroleum distillates. Jour. Am. Chem. Soc., vol. 40, May, 1918, pp. 822–856. Chem. Abs., vol. 12, Aug. 20, 1918, pp. 1643–1646. Deals first with theoretical considerations, then with more practical phases of the subject as a problem of petroleum refining. Concludes that the tars sometimes noted in refining gasolines and kerosenes made by cracking are due to the presence of di-olefins, and that the tars invariably obtained in refining crude lubricating oils with sulphuric acid are not due to simple olefins; and that, at present, there is no method for the quantitative determination of the per cent by volume of unsaturated hydrocarbons in petroleum oils.

**1115.** MOORE, R. J., MORRELL, J. C., AND EGLOFF, GUSTAV. The solubility of par affins, aromatics, naphthenes, and olefins in liquid sulphur dioxide. Met. and Chem. Eng., vol. 18, Apr. 15, 1918, pp. 396–402. A study of the possibility of using liquid sulphur dioxide in oil refining and analysis.

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**1116.** BOGAERTS, J. Purifying oils. English patent 116,765, Aug. 14, 1918. Application 9,099, June 25, 1917.

**1117.** BULL, HANS. Sulphonation of aromatic hydrocarbons. Canadian patent 187,834, Dec. 10, 1918. Filed Aug. 31, 1917.

**1118.** DAY, D. T., AND DAY, R. B. Hydrocarbon oils. English patent 119,441, Nov. 27, 1918. Application 16,900, Nov. 16, 1917. Canadian patent 188,035, Dec. 31, 1918. Filed Aug. 2, 1918.

**1119.** DOWNS, C. R. Sulphonation of hydrocarbons and hydrocarbon derivatives. United States patents 1,279,295, 1,279,296, Sept. 17, 1918.

**1120.** HUMPHREYS, R. E. Process of refining mineral petroleum oils. United States patent 1,286,179, Nov. 26, 1918.

**1121.** KNOTTENBELT, H. W. Petroleum and other hydrocarbon oils. United States patent 1,277,605, Sept. 3, 1918.

**1122.** MAITLAND, H. T. Process of refining hydrocarbon oils. United States patent 1,272,979, July 16, 1918.

*See also* Nos. 1126, 1203, 1577.

### BY-PRODUCTS AND RECOVERY OF REAGENTS (616.13).

**1123.** BROOKS, B. T. Fats and fatty acids from petroleum. Met. and Chem. Eng., vol. 18, Apr. 15, 1918, pp. 388–389. Criticism of an article on this subject by R. J. Moore and Gustav Egloff. *See* No. 1128.

**1124.** BROOKS, B. T., SMITH, D. F., AND ESSEX, HARRY. The manufacturer of amyl acetate and similar solvents from petroleum pentane. Jour. Ind. and Eng. Chem., vol. 10, July, 1918, pp. 511–515. Describes method for the conversion of chlorpentane to the corresponding acetates under conditions capable of realization on a commercial scale with little difficulty and at moderate cost.

**1125.** GARNER, J. B. The chemical possibilities of natural gas. Proc. Nat. Gas Assoc. of Am., vol. 10, 1918, pp. 136–169. Nat. Gas and Gasoline Jour., vol. 12, September, 1918, pp. 319–330; Gas Age, vol. 41, June 15, 1918, pp. 555–560. Am. Gas Eng. Jour., vol. 108, May 25, 1918, pp. 489–495, 505–508; Chem. Eng., vol. 26, June, 1918, pp. 245–254. *See also* Intercol. Gas Jour. Canada, vol. 11, July, 1918, pp. 266, 268–269, 271–275. Considers the possibilities of the manufacture of various products, such as amyl acetate, propane and butane, carbon black, and olefine hydrocarbons, etc.

**1126.** Gasiorowski, S., and von Kozicki, G. [Oily constituents of acid tars (from petroleum refining).] Bergbau und Hütte, Jahrg. 4, 1918, pp. 181–182; Ztschr. angew. Chem., Jahrg. 31, 1918, Ref., p. 354; Jour. Soc. Chem. Ind., vol. 38, Jan. 31, 1919, p. 35A; Chem. Abs., vol. 13, May 10, 1919, p. 1014. Study of an oil obtained by steam distillation from the acid tar produced by diluting with water the waste acid of petroleum refining.

**1127.** Koller, Theodor. The utilization of wood waste. A treatise on the rational utilization, recovery and treatment of waste products of all kinds. Translated from the second revised German edition by H. B. Stocks. 3rd edition, revised and enlarged. New York, D. Van Nostrand Co., 1918. 346 pp. Includes discussion of the utilization of petroleum residues and the by-products and chemicals of refineries.

**1128.** Moore, R. J., and Egloff, Gustav. Fats and fatty acids from petroleum, Met. and Chem. Eng., vol. 18, Mar. 15, 1918, pp. 308–311; Discussion, Apr. 15. pp. 388–389, by B. T. Brooks (*see* No. 1123); Oil and Gas Jour., vol. 16, Apr. 11, 1918, pp. 46–47; Oil, Paint and Drug Rep., vol. 93, Apr. 29, 1918, pp. 59–60. Discusses methods offered up to the present time for preparing fats and fatty acids from the paraffins, naphthenes, and oelfines in petroleum oils, considering them under the following four groups: (1) Through halogenation of aliphatic hydrocarbons; (2) by way of Grignard's reaction; (3) by way of naphthenes; (4) the direct oxidation of paraffins or olefines. Emphasizes the present need for the synthetic production of fats and fatty acids.

**1129.** Wegrzyn, H. [Application of the Grignard reaction to the preparation of acids from some petroleum derivatives.] Petroleum Ztschr., Jahrg. 13, 1918, pp. 241–243; Chem. Zentr., Jahrg. 90, II, 1919, pp. 121–122; Jour. Soc. Chem. Ind., vol. 38, May 15, 1919, p. 278A.

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**1130.** Dennis, L. M. Separating sulfonic acid derivatives of aromatic hydrocarbons from their mixtures with sulphuric acid, and converting them into salts. French patent 483,716, Aug. 2, 1917.

**1131.** Pearson, E. N., and Meredith, L. Fuel. English patent 115,790, July 17, 1918. Application 2059, Feb. 5, 1918. Uses oil-saturated fullers' earth from petroleum refineries.

**1132.** Taveau, R. deM. Petroleum product and process of making same. United States patent 1,271,387, July 2, 1918.

## OXIDATION, HARDENING, AND SAPONIFICATION (616.14).

**1133.** Bergmann, Maximilian. [The oxidation products of paraffin.] Ztschr. angew. Chem., Jahrg. 31, I, 1918, pp. 69–70; Jour. Soc. Chem. Ind., vol. 37, July 15, 1918, p. 362A; Jour. Chem. Soc., vol. 114, July, 1918, p. i 285; Chem. Abs., vol. 12, Nov. 10, 1918, p. 2246. Results of experiments with a refined white paraffin of Galician origin.

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**1134.** Gibbs, H. D. Aldehydes. English patent 119,517, Dec. 4, 1918. Application 14,150, Oct. 1, 1917.

**1135.** ——— Aldehydes, carboxylic acids, etc. English patent 119,518, Dec. 4, 1918. Application, 14,151, Oct. 1, 1917.

**1136.** ——— Hydrocarbon oxidizing process. Canadian patent 186,444, Sept. 10, 1918; filed Sept. 14, 1917.

**1137.** Gibbs, H. D., and Conover, Courtney. Hydrocarbon oxidizing process. Canadian patent 186,445, Sept. 10, 1918; filed Sept. 14, 1917.

**1138.** McElroy, K. P. Process of and apparatus for oxidizing hydrocarbons. United States patent 1,253,617, Jan. 15, 1918.

*See also* No. 1128.

### MISCELLANEOUS (616.19).

1139. CHEMICAL AND METALLURGICAL ENGINEERING. Dehydrogenation of petroleum oils. Vol. 19, Dec. 1, 1918, p. 777. Quotes A. S. Ramage, Canadian Chem. Jour., Aug., 1918, on a commerical method of making volatile motor oils from high-boiling paraffins without decarbonization.

1140. PHILLIPS, J. P. Sulphur in natural gas. Bessemer Monthly, August, 1918, pp. 2, 4. Explains the iron sponge process of eliminating sulphur from natural gas and a similar process in which a mixture of ground corn cobs and iron cuttings is used.

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1141. DUNSTAN, A. E. Purifying oils. English patent 119,751, Dec. 11, 1918. Application 17,613, Nov. 28, 1917.

1142. EVANS, E. V. Eliminating sulphur from oils. United States patent 1,257,829, Feb. 26, 1918.

1143. MCAFEE, A. M. Process of purifying paraffin. United States patent 1,277,092, Aug. 27, 1918.

1144. ——— Process of saturating oils. United States patent 1,277,328, Aug. 27, 1918.

1145. ——— Purifying oils. United States patent 1,277,329, Aug. 27, 1918.

1146. MANN, F. W., AND CHAPPELL, M. L. Process for the production of aromatic bodies from petroleum oils. United States patent 1,257,906, Feb. 26, 1918.

1147. NELSON, JOHN. Purifying hydrocarbon oils. English patent 113,131, Apr. 4, 1918. Application 1,864, Feb. 6, 1917.

1148. PHILIP, ARNOLD. Treating oils. United States patent 1,286,091, Nov. 26, 1918.

1149. STEWART, JEFFREY. Process of obtaining oils. United States patent 1,276,822, Aug. 27, 1918.

*See also* No. 801.

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#### PATENTS.

1150. HALL MOTOR FUEL (LTD.). Deodorizing and clarifying volatile organic liquids. French patent 483,231, June 13, 1917.

1151. MARKS, E. C. R. Purifying oils. English patent 118,353, Oct. 16, 1918. Application 13,784, Sept. 25, 1917.

1152. MELCHIOR, F. M. A. A. Apparatus for treating or distilling hydrocarbons or liquids likely to form emulsions. United States patent 1,253,411, Jan. 15, 1918.

1153. SWAN, O. C. Reclaiming oils. Australian patent 5,264, Sept. 22, 1917. Canadian patent 182,307, Feb. 12, 1918. Filed Aug. 15, 1917.

### PROCESSES (616.21).

#### FILTRATION, REFRIGERATION, AND COMPRESSION (616.211).

1154. ENGINEERING. The Sands oil separator. Vol. 106, Oct. 25, 1918, p. 475. Description of an oil and water separator for use in separating water from contaminated lubricating oil.

1155. MAY, E. M. The science of oil filtration. Petroleum, vol. 5, Sept., 1918, pp. 143-146, 148, 150. Discusses the requirements necessary for a modern oil filter, and describes various filtering systems and kinds of filters.

1156. ———. Steam turbine oil filtration. Lubrication, vol. 5, May, 1918, pp. 12–16. Explains two methods of filtering, the batch system and the partial filtration system, by which the oil may be constantly filtered, purified, and returned to the oil storage chamber to be used again.

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1157. FOLGER, E. P Apparatus for cooling wax-bearing oil for pressing. United States patent 1,256,460, Feb. 12, 1918.

1158. Hall, W. A. Apparatus for deoderizing and clarifying volatile organic liquids. Canadian patent 186,579, Sept. 17, 1918. Filed Feb. 18, 1918.

1159. Heyl, G. E. Purifying oily liquids. English patent 111,953, Feb. 6, 1918. Application 2,587, Feb. 21, 1917.

1160. Highfield, J. S. Apparatus for cleansing and filtering oil and similar liquids. English patent 115,140, June 26, 1918. Application 9,497, July 3, 1917.

1161. Kershaw, Henry. Filter for gasoline. Canadian patent 186,873, Oct. 8, 1918. Filed Aug. 9, 1918.

1162. Munro, A. G. Process for clarifying oil. United States patent 1,284,750, Nov. 12, 1918.

*See also* No. 938.

### EXTRACTION (616.212).

1163. Mining American. Washing process for oil sands. Vol. 77, Mar. 16, 1918, pp. 9–10. Process of M. A. Robinson for leaching or washing oil from mined saturated sands.

### EMULSIFICATION (616.213).

1164. Schlaepfer, A. U. M. Water-in-oil emulsions. Jour. Chem. Soc., vol. 113, 1918, pp. 522–526. Jour. Soc. Chem. Ind., vol. 37, Aug. 15, 1918, p. 402A. Describes experiments in preparation of water-in-oil emulsions with the aid of a finely divided solid (carbon) insoluble in both liquids and more easily wetted by the oil than by the water.

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## MECHANICAL TREATMENT (616.3).

### CENTRIFUGAL (616.31).

1166. International Marine Engineering. De Laval method of oil reclamation. Vol. 23, Dec., 1918, p. 720. Description, with illustrations.

1167. Taller, W. A. Oil separators. Nat. Eng., vol. 22, June, 1918, pp. 268–270. Discusses factors affecting their efficiency.

*See also* No. 935.

## RECOVERY OF GASOLINE FROM NATURAL GAS (617).

1168. Diserens, Paul. Recovery of gasoline from casing head and natural gas. Jour. Eng. Club, St. Louis, vol. 3, Jan.–Feb., 1918, pp. 25–43. Jour. Am. Soc. Mech. Eng., vol. 40, Oct., 1918, pp. 834–838. (Abstract.) Paper presented at joint meeting of the Assoc. Eng. Soc. of St. Louis, Jan. 16, 1918. Describes compression and absorption methods.

1169. Fisher, H. A. Gas of adjoining wells differs in gasoline. Nat. Petroleum News, vol. 10, Jan. 16, 1918, pp. 64, 66. In order to correct the general impression that gas from the same sand throughout a section or pool will be uniform in quality and gasoline content, results of tests of the gas from nine wells on a lease in West Virginia are given, showing a wide variation in gasoline content.

1170. McDowell, J. C. Gasoline from natural gas. Nat. Gas and Gasoline Jour., vol. 12, Mar., 1918, pp. 103–105. Brief description of methods of recovery, blending, etc.

1171. Oberfell, G. G. Testing natural gas for gasoline. Jour. Ind. and Eng. Chem., vol. 10, Mar., 1918, pp. 211–214. Describes experiments made with a view to finding a method which will give the gravity and content of gasoline in natural gas under all conditions of pressure encountered in field testing. Modifications of the absorption method were studied and apparatus and operations are described in detail.

1172. Peterson, F. P. Extraction of gasoline from natural gas as an industry allied to production and refining of petroleum. Trans. Am. Inst. Min. Eng., vol. 59, 1918, pp. 578–589. Published first in Bull. Am. Inst. Min. Eng., Dec., 1917, pp. 2075–2086. Gives the history of the development of the industry and describes the two methods of extraction now in use, with a comparison of the merits details of the two systems.

1173. Sieplein, O. J. The relation of gas pressure to the gasoline content of natural gas. Bessemer Monthly, Jan., 1918, pp. 2, 4; February, pp. 2–4; Oil Age, vol. 14, Mar., 1918, pp. 29–31.

1174. Westcott, H. P. Handbook of casing-head gas. Erie, Pa., Metric Metal Works, 1918. 2d ed. 577 pp.

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1176. Wolf, Linus. Method of producing and separating liquefied gas. United States patent 1,274,970, Aug. 6, 1918.

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1178. Leet, W. G. Process for producing petroleum from hydrocarbon oils. Petroleum, vol. 4, Feb., 1918, pp. 170–173; Mar., pp. 167–168. Describes absorption process for obtaining light oils from natural gas.

1179. Merriam, E. S. Gasoline from natural gas. Gas. Rec., vol. 14, Aug. 14, 1918, pp. 62–64. Describes a modification of the absoprtion process.

1180. Mining and Oil Bulletin. Manufacturing gasoline by the absorption process. Vol. 4, Oct., 1918, pp. 472–474, 501. Tells of the successful application of the process by the National Products Co. of California, giving the principles of the process, brief description of the equipment needed, and the various steps in its operation.

1181. Murphy, S. E. Development of the natural gas gasoline industry. Doherty News, vol. 4, Dec., 1918, pp. 5–9. Includes brief explanation of the absorption and compression processes. Also in Petroleum, vol. 6, Jan. 1919, pp. 174, 812–185.

1182. Natural Gas and Gasoline Journal. Automatic regulation. Vol. 12, July, 1918, p. 250. Description, with illustrations, of an automatic system for the regulating of oil supply in absorber tanks.

1183. Petroleum. Gasoline manufacture stimulated by casing-head plants. Vol. 5, May, 1918, pp. 107–108, 110, 183. Includes general description of the absorption method of extracting gasoline from natural gas.

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1184. Devericks, F. C. Process for making gasoline. United States patent 1,260,970, Mar. 26, 1918.

1185. Lacy, B. S. Separation of the constituents of gaseous mixtures. United States patent 1,272,059, July 9, 1918.

*See also* Nos. 225 910.

### COMPRESSION (617.2).

1186. Dykema, W. P. Recovery of gasoline from natural gas by compression and refrigeration. Bureau of Mines Bull. 151, 1918, 123 pp. Description of conditions of actual operation and equipment used in this process.

1187. Petroleum. A. B. C.'s of gasoline from natural gas. Vol. 4, April, 1918, pp. 115–117, 119. Simple explanation of the compression method.

**1188.** Reichard, G. A. Two-stage compressors for condensation of gasoline. Nat. Eng., vol. 22, May, 1918, pp. 194–195. Brief description of compressors and method of operation.

PATENTS.

**1189.** Sheets, E. H. Apparatus for obtaining liquid hydrocarbons. United States patent 1,273,191, July 23, 1918.

**1190.** Weir, J. B. Method of manufacturing gasoline. United States patent 1,282,338, Oct. 22, 1918.

*See also* Nos. 254, 255, 1181.

## MANUFACTURE OF CARBON BLACK FROM NATURAL GAS (618).

**1191.** Fisher, H. A. Warns against crowding carbon black industry. Nat. Petroleum News, vol. 10, Jan. 16, 1918, p. 64. Discusses briefly the abnormal demand for carbon black and its effect on the industry in the building of numerous plants for its production and the investigation of new methods of increasing the production per thousand feet. Gives general idea of cost of installation and shipping costs.

**1192.** Oil and Gas Journal. Gas wasted in the production of carbon black? Vol. 17, Dec. 6, 1918, p. 48; Nat. Gas and Gasoline Jour., vol. 12, December, 1918, pp. 446–447. Outlines the position of the United States Fuel Administration on the conservation of natural gas in the manufacture of carbon black—that domestic and industrial consumption should hold priority over carbon manufacture, and that more economical methods should be used when the gas is used for this purpose.

**1193.** West, F. H. Sale of natural gas carbon black increasing. Gas Age, vol. 42, Dec. 16, 1918, pp. 535–536. A prediction of the use of natural gas solely for making carbon black, based on the increasing domestic and foreign demand for this product and the cheapness with which it may be produced from natural gas.

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**1194.** Brownlee, R. H., and Uhlinger, R. H. Apparatus for the manufacture of hydrogen and carbon black. United States patent 1,265,043, May 7, 1918. From methane.

**1195.** Gerard, J. M. Process for the manufacture of carbon black and lampblack. United States patent 1,278,137, Sept. 10, 1918. From natural gas.

**1196.** Hirt, L. E. Manufacture of carbon or lampblack. United States patent 1,264,796, Apr. 30. 1918. From natural gas.

**1197.** McCourt, C. D., and Ellis, Carleton. Process for manufacturing gas-black, hydrogen, etc. United States patent 1,276,385, Aug. 20, 1918. Canadian patent 187,661, Nov. 26, 1918. Filed Feb. 7, 1912. From methane

**1198.** Mott, W. R. Process of manufacturing lampblack. United States patent 1,259,121, Mar. 12, 1918. From natural gas.

*See also* Nos. 107, 225, 900, 1125.

## SPECIFIC PRODUCTS AND THEIR MANUFACTURE (620).

### GASOLINE (621).

PATENT.

**1199.** Black, J. C. Process of producing gasoline. United States patent 1,275,648, Aug. 13, 1918.

*See also* Nos. 1001, 1178, 1216, 1577.

### LUBRICANTS (622).

PATENTS.

**1200.** Skinner, W. F. Lubricant. New Zealand patent 39,709, Jan. 5, 1918. (Published Dec. 12, 1918.)

1201. Stern, E. Substitute for lubricating oil. German patent 302,986, Mar. 31, 1916.

## PARAFFIN, VASELINE, CERESIN, AND MONTAN WAX (623).

### PATENTS.

1202. Hussey, J. S. Extracting paraffin from oils. United States patent 1,277,935, Sept. 3, 1918.

1203. Rosenbaum, R. R. Process for separating hydrocarbons. United States patent 1,278,023, Sept. 3, 1918.

*See also* No. 811, 1143.

## ASPHALT (624).

### PATENT.

1204. Amann, V. and Pitzner, A. Transportable asphalt. Swiss patent 76,168, Nov. 1, 1917.

*See also* No. 1, 813.

## MEDICINAL OILS (625).

### PATENT.

1205. Fairweather, H. G. C. Refining oils (paraffinum liquidum). English patent 116,418, July 31, 1918. Application 12,672, Sept. 4, 1917.

*See also* No. 1145.

Gas and Fuel Oils, *see* Nos. 1140, 1574.

## OTHER PRODUCTS (629).

1206. National Petroleum News. Would spend millions to take argon from north Texas gas. Vol. 10, Dec. 25, 1918, p. 18. *See also* Oil and Gas Jour., vol. 17, Jan. 17, 1917, p. 57. Outlines plan of the Bureau of Mines to extract argon from Petrolia gas in a plant at North Fort Worth, Tex.

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1207. Bauer, H. Preparation of technically pure naphthenic acids. German patent 302,210, Dec. 12, 1916.

1208. Cooper, R. A., and Edwards, K. Method of producing high-boiling phenols. English patent 116,905, Aug. 21, 1918. Application 4,430, Mar. 27, 1917.

1209. Dyer, Walter. Process for making drying oils from mineral oils. United States patent 1,256,535, Feb. 19, 1918. Nat. Petroleum News, vol. 10, May 22, 1918, p. 18.

1210. Lowe, S. G. Core oil. United States patent 1, 283,237, Oct. 29, 1918.

1211. McElroy, K. P. Manufacture of glycols and glycol derivatives. Canadian patent 186,633, Sept. 17, 1918. Filed June 8, 1917.

1212. O'Brien, J. M. Liquid fuel. English patent 111,864, Feb. 6, 1918. Application 12,579, Sept. 5, 1916.

1213. Rose, J. R. Process of manufacturing gaseous fuel. United States patent 1,254,360, Jan. 22, 1918.

1214. Starke, P. A. Process for the synthetic production of ammonia (from natural gas). United States patent 1,256,273, Feb. 12, 1918.

1215. Thiele, F. C. Process for the manufacture of drying oils. United States patent 1,254,866, Jan. 29, 1918.

1216. Todo, P. Treating hydrocarbon oils. Japanese patent 32,460, Mar. 29, 1918.

*See also* No. 1127, 1129.

## LOSSES, DISPOSAL OF WASTES, FIRE HAZARDS, AND PREVENTION (630).

1217. FENNO, H. C. Refinery fires—causes and protection. Petroleum, vol. 5, October, 1918, p. 197. Suggests concrete or brick dikes around stills, wide space between boiler house and stills, etc.

1218. OIL AND GAS JOURNAL. In refining the loss of oil is enormous. Vol. 17, Nov. 22, 1918, p. 44. Gives percentages, computed from Bureau of Mines refinery statistics, of loss of oil in various districts of the United States during 1917 and the first six months of 1918. A communication of the United States Fuel Administration to all refiners.

PATENT.

1219. PARR, T. D. Process of recovering the vapor of volatile liquids. United States patent 1,269,639, June 18, 1918.

*See also* No. 693, 911, 1127.

## RECORDS AND STATISTICS, COSTS (640).

1220. OIL AND GAS JOURNAL. Gasoline and fuel cost outlined. Vol. 16, Feb. 7, 1918, p. 38. *See also* Nat. Petroleum News, vol. 10, Feb. 6, 1918, pp. 10–11; Oil Trade Jour., vol. 9, Feb., 1918, pp. 3–4. Petroleum Age, vol. 5, Feb., 1918, pp. 10–12. Petroleum, vol. 4, Mar., 1918, p. 29. Quotes findings of the Federal Trade Commission concerning costs of refining these products in the various fields. From Federal Trade Commission petroleum bulletins 1 and 2, released for publication Jan. 26 and 28 respectively, 1918.

*See also* No. 40.

## CONSTRUCTION, EQUIPMENT, AND MATERIALS (650).

PATENTS.

1221. LORENZ, C. O. Electrical apparatus for heating stills, boilers, and the like. United States patent 1,262,072, Apr. 9, 1918.

*See also* Nos. 208, 572, 575, 936, 1182.

## REFINERY ECONOMY (660).

1222. BOECK, P. A. Explains saving of heat by insulation in oil refineries. Nat. Petroleum News, vol. 10, Nov. 6, 1918, pp. 34, 36, 38. Gives brief outline of the effect of modern development along insulation lines as applied to stills, forewarmers, flues, chill rooms, boiler settings, steam pipes lines, and mains.

1223. FEHL, C. O. Conservation of fuel and ammonia. Petroleum, vol. 5, Sept., 1918, pp. 155–159. Shows how the above products may be saved in the wax plant of a refinery by the use of an exhaust steam-absorption refrigerating machine.

*See also* No. 576.

## MISCELLANEOUS (690).

1224. DAVIDSON, J. G. Electrical precipitation of tar fog. Trans. Canadian Min. Inst., vol. 21, 1918, pp. 252–258. Includes (p. 256) account of an attempt to apply this principle in petroleum distillation for the removal from the vapors of particles consisting of heavier substances than are desired. The removal of acid sludge is also to be studied.

1225. UNITED STATES CONGRESS. Senate. Profiteering. Letter from the chairman of the Federal Trade Commission in response to a Senate resolution of June 10, 1918, transmitting a report containing all facts, figures, data, or information now in possession of the Federal Trade Commission relative to profiteering. 65th Cong. 2d sess., Doc. 248. Washington, 1918. 20 pp. Includes (pp. 6–7, 13–14) information on the petroleum industry.

# UTILIZATION (700).

## GENERAL.

1226. Jones, E. N. Many uses are found for natural gas. Oil and Gas Jour., vol. 17. July 10, 1918, pp. 45–46. Contains list of valuable natural gas by-products already commercially used or about to be put on the market.

1227. Mangold, J. F. The uses of petroleum. Pahasapa Quarterly, vol. 7, Feb., 1918, pp. 57–62. Discusses the following uses: Illuminating oil, fuel oil, road oil, asphalt and bitumen, lubricating oil, and medicinal oil.

*See also* Nos. 2, 417, 929.

## LIGHT (710).

1228. Sarrade, H. [Lighting and heating since the beginning of hostilities.] Chimie et Industrie, t. 1, 1918, pp. 254–264. Chem. Abs., vol. 12, Nov. 10, 1918, p. 2245. Reviews the use of petroleum, gas, and electricity.

*See also* Nos. 229, 1227.

### GAS ILLUMINATION (711).

1229. Critchfield, C. V. The value of gas delivered at varying pressures. Proc. Nat. Gas Assoc, of Am., vol. 10, 1918, pp. 182–197; discussion, pp. 198–211. Nat. Gas and Gasoline Jour., vol. 12, Aug., 1918, pp. 285–290; discussion, pp. 290–294. Results of experiments made to determine to what extent pressure influences the value of natural gas to domestic consumers, and description of apparatus used.

*See also* Nos. 840, 1612.

## HEAT AND POWER (720).

### GENERAL.

1230. American Society of Mechanical Engineers. The economical use of fuel. A symposium contributed to the Worcester meeting of the Society, June, 1918. Jour. Am. Soc. Mech. Eng., vol. 40, July, 1918, part 2, pp. 601–660. Includes the following: A review of the fuel oil situation, by A. C. Bedford, p. 609; answers to the question, "To what extent is fuel oil likely to be used as a substitute for coal?", by E. H. Peabody, W. N. Best, and others, p. 613; answer to the question, To what extent is natural gas being used as a fuel for power purposes?", by S. S. Wyer, p. 655. *See also* separate authors.

1231. Baillie, A. F. Fuel oil and its applications. Petroleum Rev., vol. 38, Jan. 19, 1918, pp. 37–38; Jan. 26, pp. 63–64; Page's Eng. Weekly, vol. 33, Dec. 6, 1918, pp. 282–283, 286; Dec. 14, pp. 298–299. Paper before the Gloucester Engineering Society. After a brief survey of the methods of production, storage, transportation, refining and distribution of fuel oil, using the Mexican industry as an example; the applications of fuel oil are summarized and its advantages in comparison with coal discussed.

1232. **Bedford, A. C.** A review of the fuel oil situation. Jour. Am. Soc. Mech. Eng., vol. 40, July, 1918, part 2, pp. 606–607. Part of a symposium on the economical use of fuel. (*See* No. 1230.) General discussion, advocating the use of coal instead of oil in certain kinds of manufacturing, and the increase of storage facilities.

1233. **Electrical World.** What substitution of oil for coal can do. Vol. 71, Apr. 6, 1918, pp. 711–714. Account of experience in plant where the use of fuel oil afforded both mechanical and economical advantages.

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1238. **Peabody, E. H.** Obtaining the greatest efficiency from the use of fuel oil—comparison with coal. Petroleum, vol. 5, October, 1918, pp. 183–184, 186, 190.

1239. **Peabody, E. H., and Best, W. N.** To what extent is fuel oil likely to be used as a substitute for coal? Jour. Am. Soc. Mech. Eng., vol. 40, July, 1918, part 2, pp. 613–619. Part of a symposium on the economical use of fuel. *See* No. 1230.

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1243. ——— How to save fuel oil. Jour. Elec., vol. 41, July 1, 1918, pp. 24–15. Discusses rules of the U. S. Fuel Administration for saving fuel oil.

1244. ——— Special problems in fuel oil-saving. Jour. Elec., vol. 41, Sept. 15, 1918, p. 272. Solution of seven problems typical of situations which arise in everyday practice.

1245. ——— Timely rules for the saving of fuel oil. Jour. Elec., vol. 41, July 15, 1918, pp. 76–77. A discussion of the rules of the U. S. Fuel Administration to assist in the saving of fuel.

1246. **Wadsworth, J. M.** Efficiency in the use of fuel oil. A handbook for boiler-plant and locomotive engineers. Bureau of Mines, 1918. 86 pp.

1247. **Wyer, S. S.** To what extent is natural gas being used as a fuel for power purposes? Jour. Am. Soc. Mech. Eng., vol. 40, July, 1918, pt. 2, p. 655. Part of a symposium on the economical use of fuel. (*See* No. 1230.)

*See also* Nos. 42, 229, 1227, 1228, 1672.

## STEAM RAISING (721).

*See* No. 1231.

### ON LOCOMOTIVES (721.1).

1248. PETROLEUM. Railroad needs for petroleum increase. Vol. 5, October, 1918, pp. 105, 108, 110. Reviews use of petroleum products for fuel and lubricants by railroads.

*See also* No. 1246.

### ON SHIPS (721.2).

1249. HURLEY, E. N. When Coal Oil Johnny goes to sea. Saturday Evening Post, vol. 191, Dec. 14, 1918, pp. 8, 63; Motorship, vol. 4, January, 1919, pp. 16–17. Discusses the part played by petroleum in the world shipping of the future, the advantages of oil for ships and the use of the Diesel engine on ships.

1250. KERMODE, J. J. Fuel oil. Engineering, vol. 105, Jan. 18, 1918, pp. 75–76. Reviews the advantages of fuel oil in industrial and marine uses. *See also* Petroleum Rev., vol. 38, Feb. 2, 1918, p. 71.

1251. NAUTICAL GAZETTE. Oil as fuel for marine craft. Vol. 93, Feb. 7, 1918, p. 17. Discusses the probable future supply of fuel oil and the use of Mexican oil in internal combustion engines.

1252. PAN AMERICAN RECORD. Oil superior to coal. Vol. 2, March, 1918, pp. 14–15. Explains advantages of oil in marine and industrial uses.

1253. PETROLEUM. Tankers vital to war and future commerce. Vol. 4, February, 1918, pp 24–26, 42. Contains an enumeration of the advantages of the use of oil fuel in the operation of war vessels and a detailed description of the Union Oil Co.'s tanker La Brea.

*See also* Nos. 13, 1295.

## INDUSTRIAL (722).

GENERAL. *See* Nos. 1231, 1232, 1250, 1252.

### METALLURGICAL, FOUNDRY, AND LIKE INDUSTRIES (722.1).

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1255. DICKSON, W. S. Advantages offered by the oil-fired cupola. Foundry, vol. 46, August, 1918, pp. 381–382. Describes process in which crude oil is sprayed directly on the coke bed to increase the heat and reduce the amount of coke used.

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*See also* No. 1127.

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1259. International Marine Engineering. Economical method of burning fuel oil. Vol. 23, June, 1918, pp. 348–351. Describes the "Oilgas" furnace, explaining its advantages.

1260. Oil Age. Conservation of fuel oil in furnaces. Vol. 14, April, 1918, p. 30. Explains principle and advantages of the Merit automatic oil stoking system.

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1262. Griffin, J. J. Installation for burning natural gas under boiler. Nat. Gas and Gasoline Jour., vol. 12, Aug., 1918, p. 285. Illustrated by drawings.

1263. Honberger, F. S. Mixing gases. Nat. Gas and Gasoline Jour., vol. 12, Dec., 1918, pp. 430–432; Am. Gas Eng. Jour., vol. 107, Oct. 27, 1917, pp. 376–379, 382. Study of the diffusion of natural and artificial gases, the effect of their mixture on meter diaphragms and appliances, and the necessary adjustment of burners.

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1266. Oil Age. Successful burner for fuel oil. Vol. 14, Nov., 1918, pp. 13–14. Describes the Ray oil burner.

1267. Power Plant Engineering. Successful burner for fuel oil. Vol. 22, Dec. 15, 1918, p. 1016. Describes the Ray oil burner.

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1269. Ramelli, S. H. Crude-oil expander. United States patent 1,270,210, June 18, 1918.

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1271. ——— Le moteur à essence adapté à l'automobile et à l'aviation. Paris, H. Dunod et E. Pinat, 1918. 179 pp.

1272. Drosne, ——— Les moteurs à combustion et leurs applications. Rev. gén. sci., t. 29, Dec. 15, 1918, pp. 666–673. Origin and development of semi-Diesel engines and review of use in France and elsewhere of Diesel engines of various types.

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1274. Everett, P. N. The internal combustion engine. Page's Eng. Weekly, vol. 32, Apr. 12, 1918, pp. 172–173; Motorship, vol. 3, July, 1918, pp. 21–22. Abstract of paper before the Newcastle and District Branch of the Association of Engineering and Shipbuilding Draughtsmen. History and general discussion of the internal combustion engine.

1275. International Marine Engineering. New type of marine oil engine. vol. 23, October, 1918, pp. 563–566. Description of the Weiss engine, a two-cycle engine, with some novel features.

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**1286.** Aviation and Aeronautical Engineering. The Hall-Scott 6-cylinder 200 hp. airplane engine. Vol. 4, July 1, 1918, pp. 787–788. Detailed description of the engine, including discussion of fuel and oil economy, carburetion, etc.

**1287.** ——— The 180-hp. Mercedes aero engine. Vol. 5, Aug. 15, 1918, pp. 98–101. Report issued by the Technical Department, Aircraft Production, British Ministry of Munitions.

**1288.** Heldt, P. M. The gasoline automobile, its design and construction. 5th ed. of Vol. 1. Nyack, N. Y., published by the author, 1918. 636 pp.

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**1293.** Chalkley, A. P. Diesel engines for land and marine work. With an introductory chapter by Dr. Rudolf Diesel. 4th edition, revised and enlarged. New York, D. Van Nostrand Co., 1918. 368 pp.

**1294.** Haas, Herbert. The Diesel engine, its fuels and its uses. Bull. 156, Bureau of Mines, 1918. 133 pp. Discusses recent developments in the design and construction of the Diesel engine, the fuels suitable for burning in it, suitable lubricating oils, and the uses to which it is particularly adapted; gives comparative costs for different types of prime movers.

**1295.** Journal of Electricity. Joint meeting of five engineering societies in San Francisco. Vol. 41, Oct. 15, 1918, pp. 375–376. Reports discussion on the use of the Diesel engine for the new merchant marine, and the probability of new power development in California to relieve the present shortage of power.

**1296.** Neumann, K. [Investigation of the Diesel engine. Thermodynamic study of the production of oil gas and the mixture.] Ztschr. Ver. Deut. Ing., Jahrg. 62, 1918, pp. 706–711, 722–726, 763–768. Chem. Zentr., Jahrg. 90, II, 1919, pp. 480–481. Jour. Soc. Chem. Ind., vol. 38, July 15, 1919, p. 452A.

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**1298.** Richardson, James. The semi-Diesel oil engine. Engineering, vol. 106, Oct. 25, 1918, pp. 461–464. Page's Eng. Weekly, vol. 33, Nov. 8, 1918, pp. 220–221. Proc. U. S. Naval Inst., vol. 45, January, 1919, pp. 116–131. Paper before the Diesel Engine User's association. Includes discussion of suitable fuels, lubrication, etc.

**1299.** Scott, P. L. Conserving fuel by use of the Diesel. Pacific Marine Rev., vol. 15, March, 1918, pp. 63–65. Sibley Jour. Eng. vol. 32, September, 1918, pp. 178-180. Advantages of Diesel engines with respect to fuel consumption, initial cost, labor, etc.

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**1302.** ——— Petroleum distillates suitable for Diesel and surface-ignition engine fuel. Pacific Marine Rev., vol. 15, Sept., 1918, pp. 92–94; Sibley Jour. Eng., vol. 33, April, 1919, pp. 34–36. Characteristics of a good fuel oil.

**1303.** Setz, H. R. The Diesel engine and our merchant marine. Motorship, vol. 3, Mar., 1918, pp. 19–21. Discusses the commercial advantages and possibilities of Diesel propelled cargo boats.

**1304.** Weber, F. D. Semi-Diesel oil engines. Jour. Elec., vol. 41, Dec. 15, 1918, pp. 549–550. Description of the semi-Diesel engine in its application to both land and marine uses.

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### HEAVY-OIL ENGINES (725.4).

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**1306.** Blakely, E. B. Possibilities of the Hvid engine. Jour. Soc. Automotive Eng., vol. 3, Aug., 1918, pp. 166–170; disc., pp. 170–174; Motorship, vol. 3, Aug., 1918, pp. 30–31. After a discussion of the problems of the use of kerosene in engines and an enumeration of the requirements for satisfactory operation of a kerosene engine, describes the construction and operation of the Hvid engine, which meets all these requirements.

**1307.** Hatch, D. S. Truck and tractor engine discards carbureter. Motor Age, vol. 33, June 6, 1918, pp. 24–25. Description of characteristic features of the Hvid engine, which does away with the carbureter and all ignition apparatus, and will use almost any kind of fuel, being similar in many respects to the Diesel engine.

**1308.** Lucke, C. E. The heavy oil engine. Jour. Eng. Club of Philadelphia, vol. 35, June, 1918, pp. 269–279, 297. Sci. Am. Suppl., vol. 86, July 27, 1918, pp. 50–51, Aug. 3, pp. 78–80; Jour. Am. Soc. Naval Eng., vol. 30, Aug., 1918, pp. 571–589; Int. Marine Eng., vol. 23, Oct., 1918, pp. 579–583, Nov., pp. 625–629, Motorship, vol. 3, June, 1918, pp. 14–16, July, pp. 19–20, Aug., p. 24, Sept., p. 23. A review of present construction and probable future development.

**1309.** Power Plant Engineering. Oil engines. Vol. 22, June 15, 1918, pp. 491–493, July 1, pp. 527–528, July 15, pp. 573–574. Discusses their principle of operation, characteristics and efficiencies, fuels used, vaporizing and mixing, and fuel supply control.

**1310.** Sargent, C. E. A type of heavy-oil engine for automotive purposes. Jour. Soc. Auto. Eng., vol. 2, June, 1918, pp. 404–410. Automotive Industries, vol. 38, June 27, 1918, pp. 1267–1269, 1287 (Abstract). Describes and discusses the advantages of the constant-compression type of engine for automotive purposes as a solution of the heavy fuel problem.

**1311.** Scott, P. L. Possible automotive adaptation of heavy oil engines. Jour. Soc. Auto. Eng., vol. 2, June, 1918, pp. 397–403; Automotive Industries, vol. 39, July 4, 1918, pp. 20–25. Emphasizes the necessity for the development of heavy-oil engines for automotive purposes and discusses their general advantages. Discusses the difficulties in adapting carbureters of gasoline engines to the use of heavy oils, the advantages and disadvantages of the Diesel system, and the merits of direct injection.

*See also* Nos. 821, 1284, 1309.

## CARBURETERS, VAPORIZERS, AND SPRAYERS (725.5).

**1312.** Automotive Industries. Holley heavy-fuel devices. Vol. 38, Feb. 21, 1918, pp. 405–406. Explains principle and illustrates the Holley kerosene carbureter.

**1313.** ——— New type kerosene carbureter. Vol. 39, Oct. 3, 1918, p. 598. Advantages and results of tests on kerosene carbureting device, invention of Enoch Rector, which operates on a new principle and which enables any internal-combustion engine designed for gasoline to generate without change the same power as with gasoline, without carbon deposit, smoke, or dilution of the crankcase oil.

**1314.** Bradley, W. F. Bellem wins French kerosene tests. Automotive Industries, vol. 39, Nov. 7, 1918, pp. 792–794. Describes kerosene "pulverizer" for use on automobile and other engines.

**1315.** Dempsey, W. L. Prerequisites for using kerosene as motor fuel. Automotive Industries, vol. 38, Mar. 21, 1918, p. 596. Explains why it is imperative (1) that the kerosene motor be provided with means for additional air beside that taken in with the fuel, and (2) that means be supplied for maintaining at all speeds an air temperature of from 400 to 500°.

**1316.** Finney, J. H. V. Adaptation of carbureters to low volatile fuels. Gas Engine, vol. 20, May, 1918, pp. 220–227. Gives results of tests in automobile engine carbureters of fuels of less volatility than gasoline, and discusses the changes necessary in carbureters so used.

**1317.** French, L. E. Kerosene vaporization. Automotive Industries, vol. 39, Nov. 14, 1918, p. 845. Describes device which combines the tube and hot spot systems of vaporizing heavy fuels for internal combustion engines.

**1318.** Gas Engine. A gas-producing oil carbureter. Vol. 20, June, 1918, pp. 293–296. Description, with illustrations, of carbureter. Explains principle and advantages over ordinary carbureters.

**1319.** Génie Civil. Emploi du pétrole lampant et des huiles lourdes dans les moteurs à basse compression. Procédés Bellem et Brégéras. (Bellem-Brégéras method of using refined petroleum and heavy oils in low-compression oil engines.) T. 73, Nov. 30, 1918, pp. 433–435. Description of the machine which won the prize in a contest, and account of tests.

**1320.** Goldingham, A. H., and O'Brien, T. C. Oil-engine sprayers or pulverizers. Motorship, vol. 3, May, 1918, pp. 3–5; July, pp. 14–15; Sept., pp. 19–20; Nov. pp. 14–15. Discusses different designs of fuel injection devices used with both hot surface type and Diesel oil engines.

**1321.** Ikert, B. M. Motor car carburetion in cold weather. Motor Age, vol. 34, Nov. 14, 1918, pp. 22–24. Discusses difficulties of cold weather carburetion, suggests remedies, and describes devices for efficient utilization of fuel.

**1322.** Motor Age. Carbureter for kerosene and fuel oil. Vol. 34, July 25, 1918, p. 40. Describes carbureter operating successfully on kerosene and fuel oil.

**1323.** ——— Four new carburetion devices. Vol. 34, Aug. 8, 1918, pp. 40–42. Describes Universal manifold, Universal Airgas carbureter, Hodges carbureter, and Kerosene Equipment carbureter.

**1324.** ——— J. T. kerosene carbureter developed. Vol. 34, Oct. 24, 1918, p. 42. Description, with diagram.

**1325.** ——— Same power on kerosene or gas. Vol. 34, Oct. 3, 1918, p. 27. Gives results of tests of Rector kerosene carbureter on heavy vehicles.

**1326.** Schipper, J. E. Combustible mixtures should be dry. Automotive Industries, vol. 38, Apr. 11, 1918, p. 730. Explains why dryness is an essential quality of the intake manifold and how it can be obtained.

1327. Strohm, R. T. Preventing waste of fuel oil. Power, vol. 48, Oct. 29, 1918, p. 636. Discusses causes of waste, particularly faulty atomization and improper regulation of air supply.

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*See also* Nos. 389, 390, 801, 1284, 1286, 1291, 1311, 1577, 1578, 1580, 1651, 1659.

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1335. Bamford, J., and Bamford, C. J. Carbureting. English patent 115,285, June 26, 1918. Application 6,696, May 11, 1917.

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1344. Bergen, A. S. Carbureter. U. S. patent 1,258,389, Mar. 5, 1918.

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**1549.** THOMPSON, ALFRED, AND BEEMAN, L. E. Carbureter. Canadian patents 182,597, Feb. 26, 1918; filed Jan. 21, 1918; 183,113, Mar. 19, 1918; filed Jan. 21, 1918.

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**1551.** TORRENS, J. A. Carbureting. English patent 117,155, Aug. 28, 1918. Application 10,697, July 25, 1917.

**1552.** TRAGER, H. E. Carbureter. Canadian patent 185,672, July 23, 1918; filed Mar.14, 1917.

**1553.** VAN BRIGGLE, L. H. Carbureter. U. S. patent 1,273,554, July 23, 1918. Canadian patent 188,082, Dec. 31, 1918. Filed Oct. 16, 1918.

**1554.** VAN DAAM, GERRIT. Carbureter. U. S. patent 1,263,967, April 23, 1918.

**1555.** VAN MITCHELL, ISAAC. Carbureter. U. S. patent 1,259,037, March 12, 1918.

**1556.** VER PLANCK, W. E. Fuel vaporizer for internal combustion engines. United States patent 1,256,186, Feb. 12, 1918.

**1557.** VOSS, E., AND OLIVER, G. Carbureting. English patent 114,717, June 5, 1918. Application 8,531, June 14, 1917.

**1558.** WADE, H. Carbureting. English patent 112,535, Mar. 13, 1918. Application 1,970, Feb. 8, 1917.

**1559.** WALFORD, E. W. External vaporizers. English patent 113,795, May 1, 1918. Application 17,376, Dec. 4, 1916.

**1560.** WALTON, F. D. Carbureting. English patent 115,283, June 26, 1918. Application 6,655, May 10, 1917.

**1561.** WASSERLEIN, V. E. Carbureter. Australian patent 6,060, Dec. 15, 1917.

**1562.** WATERHOUSE, H. D. Spray carbureters. English patent 118,060, Oct. 9, 1918. Application 2,862, Feb. 18, 1918.

**1563.** WATSON, G. W. Carbureting. English patent 113,915, May 1, 1918. Application 11,956, Aug. 20, 1917.

**1564.** WEAVER, S. W. Carbureter. U. S. patent 1,281,446, Oct. 15, 1918.

**1565.** WESTBURY, E. T. Carbureting. English patent 115,706, July 17, 1918. Application 7,550, May 25, 1917.

**1566.** WEILAND, ALFRED. Carbureter for internal-combustion engines. U. S. patents 1,274,964, 1,274,965, Aug. 6, 1918; 1,276,841, 1,276,842, Aug. 27, 1918; 1,286,856, Dec. 3, 1918.

**1567.** WELD, C. G. Auxiliary carbureter. U. S. patent 1,264,464, Apr. 30, 1918.

**1568.** WHEELER, H. C. Carbureting. English patent 116,296, July 31, 1918. Application 320, Jan. 7, 1916.

**1569.** WHITE, L. B., AND MYLIN, A. H. Vaporizer. Canadian patent 186,931, Oct. 8, 1918; filed July 8, 1918.

**1570.** WILD, E. F. Carbureter. U. S. patent 1,280,924, Oct. 8, 1918.

**1571.** WILLINBRING, JOHN. Device for utilizing kerosene for gasoline engines. U. S. patent 1,274,125, July 30, 1918.

**1572.** WILLS, D. R. Carbureter. U. S. patent 1,263,501, Apr. 23, 1918.

**1573.** YOUNG, A. F. Spray carbureters. English patent 113,340, Apr. 10, 1918. Application 3,130, Mar. 2, 1917.

## BITUMEN FUELS FOR INTERNAL-COMBUSTION ENGINES (726).

**1574.** MOORE, HAROLD. Liquid fuels for internal-combustion engines. London, Crosby Lockwood and Son, 1918. 215 pp. (New York, Van Nostrand Co.). Part I deals more or less generally with the sources of liquid fuels, such as petroleum, shale oils, tars, etc. Part II considers fuels used in engines having carbureters, vaporizers, and atomizers. Part III discusses the examination and testing of liquid fuels.

**1575.** Mowry, J. L. Fuels for tractor engines. Jour. Soc. Auto. Eng., vol. 2, March, 1918, pp. 222–223; discussion, pp. 223–225. Considers the demands of oil refiners, accessory manufacturers, engine builders, and operators in regard to the selection of fuels for tractor engines; gives results of laboratory tests of kerosene devices, and field observations of gasoline and kerosene in tractor use; enumerates possible fuels, and concludes that, until substitutes for present fuels are further developed, attention must be given to the design of spark plugs, carbureters, manifolds, etc., in order to use available fuels efficiently.

**1576.** Ormandy, W. R. The motor fuel problem. Jour. Inst. Petroleum Tech., vol. 5, Dec., 1918, pp. 33–56; discussion, pp. 56–69. Petroleum Rev., vol. 39, Nov. 23, 1918, pp. 335–336; Nov. 30, pp. 355–356; Dec. 7, p. 363. Abs. in Jour. Soc. Chem. Ind., vol. 37, Nov. 30, 1918, p. 434R; Engineering, vol. 106, Nov. 29, 1918, pp. 619–620. Discusses the supply of motor fuels—solid, liquid, and gaseous.

*See also* Nos. 914, 1251, 1297, 1298, 1302, 1306, 1309, 1319, 1575, 1669, 1670.

### FUELS FOR GAS AND GASOLINE ENGINES (726.1).

**1577.** Dean, E. W. Fuel for automotive apparatus. Jour. Soc. Auto. Eng., vol. 2, Jan., 1918, pp. 47–53, Automotive Industries, vol. 38, Jan. 24, 1918, pp. 224–228, 251. Nat. Petroleum News, vol. 10, Feb. 20, 1918, pp. 34, 36, 38, 40, 42 (Extracts). Considers briefly the characteristic qualities of gasoline and the possibility of their variation by refining methods; discusses the possibilities of increasing the supply of fuel and the efficiency of its utilization. Concludes that on the whole the fuel situation is good, and the future will require the production of more crude petroleum, the increased yield of volatile products, the development of engines to handle heavier fuels, and the search for substitutes from coal distillation, oil shale, or the fermentation industries.

**1578.** Durand, W. F. Outstanding aeronautic problems. Jour. Soc. Auto. Eng., vol. 3, Sept., 1918, pp. 213–219, Oct., pp. 280–284; Jour. Am. Soc. Naval Eng., vol. 30, Aug., 1918, pp. 627–643; Automotive Industries, vol. 39, Aug. 29, 1918, pp. 368–370, Sept. 5, pp. 424–426, Sept. 12, pp. 464–467; Aviation, vol. 5, Aug. 15, 1918, pp. 94–97, Sept. 1, pp. 170–174; Sci. Am. Suppl., vol. 86, Aug. 31, 1918, pp. 130–131, Sept. 7, pp. 150–151, Sept. 14, pp. 166–167. The sixth "Wilbur Wright Memorial" lecture presented before the Aeronautical Society of Great Britain, June, 1918. Includes discussion of fuels for aerial navigation and the operation of carbureters in an aerial engine.

*See also* No. 884.

### FUELS FOR HEAVY-OIL ENGINES (726.2).

**1579.** Autocar. Utilization of heavy fuels. Vol. 41, July 6, 1918, pp. 1–2. Discusses the necessity for thorough atomization of these fuels.

**1580.** Crouch, G. F. Fuel—the growing problem. Motor Boat, vol. 15, Feb. 25, 1918, pp. 5–7, 26–27. Discusses the problem of heavy fuels and their influence on the design of motors and carbureters.

*See also* Nos. 1294, 1310, 1311, 1596.

## SUBSTITUTES FOR BITUMINOUS FUELS IN INTERNAL-COMBUSTION ENGINES (727).

*See* Nos. 912, 1316, 1577.

### ALCOHOL (727.1).

**1581.** Petroleum World. Alcohol as an auxiliary fuel for internal combustion engines. Vol. 15, July, 1918, pp. 288–289, 294, 296–299. Summary of report by special committee appointed by the Australian Council of Science and Industry to investigate the production and utilization of alcohol for power purposes.

1582. Shields, Walter. Possibilities of many kinds of motor fuels. Petroleum, vol. 4, Jan., 1918, pp. 21–22. Discusses possibilities of coal gas, kerosene, alcohol, and steam.

### PATENTS.

1583. King, P. H., and Stoneham, J. A. Motor spirit. English patent 112,741, Mar. 20, 1918. Application 11,478, Aug. 10, 1917.

1584. Penhale, J. Motor fuel. Australian patent 6,160, Jan. 2, 1918. Alcohol, acetylene and a denaturant.

1585. Stanley, H. E. Fuel mixture. Australian patent 6,052, Dec. 14, 1917. Alcohol, ether, and a hydrocarbon.

*See also* Nos. 386, 408, 460.

## BENZOL (727.2).

1586. Automotive Industries. Tests of benzol as motor fuel. Vol. 39, Nov. 14, 1918, pp. 834, 845; Gas Age, vol. 42, Dec. 16, 1918, pp. 548–550. Results of tests conducted by the technical committee of the Automobile Club of America, using benzol and a benzol-gasoline mixture.

1587. Lucas, F. E. Benzol as a motor fuel. Bull. Canadian Min. Inst., No. 79, Nov., 1918, pp. 926–928. Discusses the possibilities of benzol pure and mixed with gasoline in automobile engines.

1588. Wattleworth, D. R. The future of benzol. Gas World, vol. 69, Dec. 7, 1918, p. 345. Includes discussion of its use as a motor fuel.

1589. Whitehead, S. E. Benzol as a motor fuel. Gas Jour., vol. 144, Dec. 17, 1918, pp. 615–616. Résumé of the literature on the following phases of the subject: Ease of starting, absence of odor and corrosion, liability to form deposits in the engine, and economical consumption.

## TAR AND TAR OILS (727.4).

1590. Engineer. A heavy oil-burning arrangement for motor cars. Vol. 126, Sept. 13, 1918, pp. 227–228. Describes invention of F. A Wilkinson to burn tar oil in an ordinary 20-horsepower touring car.

1591. Griepe, A. W. H. Coal-tar oil for Diesel engines. Gas Engine, vol. 20, Oct. 1918, pp. 465–472.

1592. ——— Use of tar oil in internal-combustion engines. Gas Age, vol. 41, Apr. 15, 1918, pp. 348–350. Details of European experience with railroad engines.

1593. Holliday, P. A. The use of tar oil in Diesel engines. Page's Eng. Weekly, vol. 32, May 10, 1918, pp. 222–223. Part of a discussion at the Diesel Engine User's Association, describing a system of burning tar oil, in actual use.

1594. Kershaw, J. B. C. Pitch as a fuel for power generation. Power, vol. 47, June 25, 1918, pp. 904–906; Gas World, vol. 68, Mar. 30, 1918, pp. 234–235. Summary of recent patents and experiments on the use of coal-tar pitch as a fuel for steam boilers and for internal-combustion engines.

1595. Moore, H. Tar oil in Diesel engines. Diesel Engine User's Assoc., May 26, 1918. Reprint, 24 pp. Jour. Soc. Chem. Ind., vol. 37, Oct. 15, 1918, p. 572A. Chem. Abs., vol. 13, May 10, 1919, pp. 1011–1012.

1596. Petroleum World. Tar-oil fuel for Diesel engines. Vol. 15, May, 1918, pp. 199–200, 202–204; June, pp. 234–235. Discussion at Diesel Engine Users' Association on devices for burning tar oil and on the varying nature of tar oils.

1597. Schertel, O. [Tar as fuel oil for Diesel engines.] Jour. Gasbel., Jahrg. 61, 1918, pp. 493–495. Jour. Soc. Chem. Ind., vol. 38, Jan. 15, 1919, p. 4A. Chem. Abs., vol. 13, May 10, 1919, p. 1012.

1598. Smith, P. H. Two essential conditions for burning tar oil in Diesel engines. Petroleum World, vol. 15, June, 1918, pp. 243–246; discussion, Sept., pp. 382, 384–386. Discusses atomization and turbulence as the two essential factors. *See also* Page's Eng. Weekly, vol. 32, May 31, 1918, pp. 256–257.

*See also* No. 1301.

### OTHER SUBSTITUTES (727.9).

**1599.** AUTOMOTIVE INDUSTRIES. Substitute for gasoline tested by Bureau of Standards. Vol. 39, Nov. 28, 1918, pp. 933, 945; Nat. Petroleum News, vol. 10, Dec. 4, 1918, pp. 12–13; Dec. 18, 1918, p. 12; Oil, Paint, and Drug Rep., vol. 94, Dec. 2, 1918, p. 28; vol. 95, Jan. 13, 1919, p. 48B; Motor Age, vol. 34, Dec. 5, 1918, p. 15; Calif. Oil World, vol. 10, Jan. 16, 1919, p. 1 (faults); Nat. Pet. News, vol. 11, Jan. 15, 1919, p. 12. Results of tests of "Liberty" fuel, said to be more powerful than gasoline, cost less than gasoline, and to be available in ample quantities.

**1600.** MOTOR AGE. To run cars on straw for fuel saving. Vol. 34, Oct. 31, 1918, p. 16. Tells of the use of gas from the burning of straw in a retort. Fifty pounds of straw make an amount of gas equal in power to a gallon of gasoline.

**1601.** NATIONAL PETROLEUM NEWS. American Auto Association indorses Eccolene gas tonic. Vol. 10, Dec. 11, 1918, p. 48. Gives analysis and results of tests made under the auspices of the American Automobile Association.

**1602.** PETROLEUM WORLD. Gas for motor cars. Vol. 15, May, 1918, p. 208. Summary of official report by English experts on the use of coal gas as a substitute for petroleum products in motor cars, presenting conclusions and recommendations as to conditions of supply, containers, etc. *See also* Jour. Soc. Chem. Ind., vol. 37, May 15, 1918, p. 186R.

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**1603.** BACKHAUS, A. A. Liquid fuel. United States patents 1,271,114, 1,271,115, July 2, 1918.

**1604.** BENDING, W. P. Liquid fuel. English patent 114,411, May 23, 1918. Application 12,856, Sept. 7, 1917.

**1605.** DYSON, S. Fuels. English patent 118,021, Oct. 2, 1918. Application 16,272, Sept. 12, 1917.

**1606.** HALL, W. A. Liquid fuel. Canadian patent 185,296, July 2, 1918. Filed Feb. 7, 1918.

**1607.** SEGUIN, J. Substitute for gasoline in internal-combustion engines. French patent 484,249, Sept. 14, 1917. Kerosene, ether, pulverized alum, oil of citronella.

**1608.** STEVENS, E. W. Motor fuel. United States patent 1,259,053, March 12, 1918.

*See also* Nos. 380, 408, 1212, 1328, 1582.

## DOMESTIC HEATING AND COOKING (728).

**1609.** BARROWS, G. S. New heating system. Nat. Gas and Gasoline Jour., vol. 12, April, 1918, pp. 135–141. Detailed description, with diagrams, of the Rector system of house heating, which is satisfactory for natural as well as artificial gas, and discussion of its advantages.

**1610.** EMMERLING, KARL. Auxiliary or dual installations for domestic and industrial consumers. Proc. Nat. Gas Assoc. of Am., vol. 10, 1918, pp. 27–41; discussion, pp. 41–50. Nat. Gas and Gasoline Jour., vol. 12, October, 1918, pp. 353–358; discussion, pp. 359–361. Gas Rec., vol. 13, May 22, 1918, pp. 337–339. Suggests methods and means for permitting the use of substitute fuel, during shortage of natural gas, without great inconvenience in changing. Describes and illustrates types of furnaces and burners to be so used.

**1611.** ENGINEER. Oil firing for domestic purposes. Vol. 126, Nov. 22, 1918, p. 445. Describes combustion system with a simple liquid-fuel burner which can be applied to a kitchen range without structural alteration or without interfering with the burning of solid fuel.

**1612.** Natural Gas and Gasoline Journal. Results of interesting experiments. Vol. 12, August, 1918, pp. 285–290. From paper, by C. V. Critchfield, on the value of gas delivered at varying pressures, presented at the annual convention of the Natural Gas Association of America, May, 1918. Describes meter provers, calorimeters, regulators, and domestic meters, all of which were used in simple experiments to determine to what extent pressure influences the value of natural gas to domestic consumers.

**1612a.** Van Meter, A. R., White, E. N. and Wyer, S. S. Kitchen tests of relative cost of natural gas, soft coal, coal oil, gasoline, and electricity for cooking. Made by the Department of Home Economics, Ohio State University, Columbus, Ohio, June, 1917. Reprinted October, 1918. 14 pp.

**1613.** White, E. N., Linder, Grace, and Wyer, S. S. Effect of gas pressure on natural gas cooking operations in the home. Based on tests made in the laboratory of the department of home economics of the Ohio State University, Columbus, Ohio. Ohio State Univ. Bull., vol. 22, May, 1918. 27 pp. Also in Nat. Gas and Gasoline Jour., vol. 12, September, 1918, pp. 313–318; October, pp. 362–366. Gives experimental data to determine the effect of pressure on cooking operations with natural gas, and fundamental principles underlying the natural gas pressure question.

*See also* Nos. 1229, 1265.

## STRUCTURAL PURPOSES (730).

*See* Nos. 1, 873, 925, 991, 1227.

### PAVEMENT AND ROAD BUILDING AND MAINTENANCE (731).

**1614.** Baker, I. O. A treatise on roads and pavements. New York, John Wiley & Sons (Inc.), 1918. 3d ed., rewritten and enlarged. 667 pp. Contains chapters on bituminous road materials, giving definitions, characteristics, and tests of various kinds of asphalt, oil, and tar, and on asphalt pavements, discussing methods and cost of construction and maintenance.

**1615.** Goodell, J. M. The location, construction, and maintenance of roads. Reprinted from "Good Roads Year Book, 1917." New York, D. Van Nostrand Co., 1918. 220 pp.

**1616.** Macdonald, T. H. Maintaining earth roads with oil. Public Roads, vol. 1, Sept., 1918, pp. 13–14. Economy of this form of treatment discussed.

**1617.** Mullen, C. A. Asphalt pavements. Canadian Engineer, vol. 34, May 16, 1918, pp. 449–450, 452; May 23, pp. 459–462. Paper prepared for the Canadian Road Congress, at Hamilton, Ontario, May, 1918. Historical review of the asphalt pavement, characteristics of materials used, and methods of construction and maintenance.

**1618.** Muller, Charles. Asphalt and its uses. Doherty News, vol. 3, June, 1918, pp. 11–14. Discusses the more important uses, such as pavements, waterproofing, roofing, floors, pipe-coating, insulation, and paints.

**1619.** ——— Asphalt industry well prepared to meet the war demands. Petroleum, vol. 5, October, 1918, pp. 188–189, 195. Reviews important uses of asphalt.

**1620.** United States Department of Agriculture. Progress reports of experiments in dust prevention and road preservation. Bull. 586, Feb. 28, 1918. Contribution from Office of Public Roads and Rural Engineering. 78 pp. Includes experiments to investigate the value, as a road-surfacing material, of earth-oil asphalt, made by mixing asphalt with a prepared mixture of earth and water.

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1621. FRASER, W. M. Process for the manufacture of bituminous emulsions. United States patent 1,258,103, Mar. 5, 1918.

1622. HENDERSON, G. A. Bituminous binder and process for making the same. United States patent 1,264,932, May 7, 1918.

1623. ——— Bituminous binder and process of making same from coal-tar pitch. United States patent 1,266,261, May 14, 1918. Mixed with petroleum.

1624. SAVAGE, WALLACE. Asphalt-like composition and process of making the same. United States patent 1,279,918, Sept. 24, 1918.

1625. SHARPNECK, E. L. Plastic paving composition. Canadian patent 184,720. June 4, 1918. Filed Apr. 8, 1918.

1626. SNELLING, W. O. Dust-reducing material. United States patent 1,258,637. Mar. 5, 1918.

*See also* Nos. 1, 2, 83, 852, 855, 889, 892, 893, 1703.

## ROOFING (732).

PATENTS.

1627. BECKER, M. B. Asphaltic shingle. United States patent 1,256,508, Feb. 19, 1918.

1628. SPIEGEL, A. S. Composition roofing. United States patent 1,264,343, Apr. 30, 1918.

1629. WARDELL, H. R. Method of manufacturing prepared roofing. United States patent 1,289,328, Dec. 31, 1918.

*See also* Nos. 1, 1618, 1621.

## WATERPROOFING AND PRESERVING (733).

PATENTS.

1630. ALLEN, J. E. Buoyant waterproof composition. United States patent 1,285,888, Nov. 26, 1918.

1631. DE LARA, I. E. D. A preservative lubricant for rubber. French patent 483,207, June 13, 1917. Vaseline and paraffin.

1632. DROULARD, EDWARD. Leather dressing. United States patent 1,278,886, Sept. 17, 1918.

1633. GAUDETTE, A. P. Mixture to be applied to wood. United States patent 1,282,806, Oct. 29, 1918.

1634. LANDER, W. V. Impregnating composition and method of making same. United States patent 1,277,322, Aug. 27, 1918.

1635. MOSNAT, H. R. Composition of matter for treating leather. United States patent 1,277,242, Aug. 27, 1918.

1636. PICARD, FRANK. Liquid coating composition. United States patent 1,281,650, Oct. 15, 1918.

1637. RODENBERGER, WELLER. Waterproof composition. United States patent 1,283,913, Nov. 5, 1918.

1638. ROGERS, ERNEST. Liquid coating composition. Canadian patent 182,859, March 12, 1918. Filed Sept. 22, 1917.

1639. VOLANT, D. Waterproof paper. English patent 111,485, 1918. Application Nov. 13, 1917. Impregnated with tar or asphalt.

1640. WINNEUR, J. F. Leather-treating composition. United States patent 1,258,729, Mar. 12, 1918.

*See also* Nos. 1, 813, 853, 887, 1618.

## PAINTS AND PAINT VEHICLES (734).

### PATENT.

**1641.** Baker, W. I. Paint vehicle and process of making same. United States patent 1,278,290, Sept. 10, 1918.

*See also* Nos. 1, 1618.

## LUBRICATION (740).

**1642.** Battle, J. R. Choosing turbine oil is important problem. Nat. Petroleum News, vol. 10, July 17, 1918, pp. 59–60, 62. Discusses the lubrication of various types of turbines and the necessary qualities in an efficient turbine oil.

**1643.** ——— High viscosity bad in turbine lubricating oil. Nat. Petroleum News, vol. 10, May 15, 1918, pp. 61–63. Discusses the properties and kinds of oils to be used in turbines, describes a simple test for emulsifying tendency in these oils, and describes the main types of lubricating systems for turbines.

**1644.** ——— How salesmen can help coal mining companies save on oil. Nat. Petroleum News, vol. 10, Sept. 18, 1918, pp. 50, 52. Discusses the selection of lubricants and economy in the use of lubrigants in mining operations.

**1645.** ——— Lubrication of explosion engines is explained. Nat. Petroleum News vol. 10, June 19, 1918, pp. 61–63. Explains splash system of lubrication, describes lubricating sequence of four-cycle motor cylinder lubrication, and discusses the selection of efficient lubricants, their necessary qualities, etc.

**1646.** ——— Textile plant lubricants must be chosen with great care. Nat. Petroleum News, vol. 10, Nov. 20, 1918, pp. 41–42. Explains important factors in the lubrication of textile mills and discusses necessary qualities in the oils used.

**1647.** Boyer, E. [The lubrication of aviation motors.] Rev. prod. chim., t. 21, 1918, p. 136. Chem. Abs., vol. 12, Aug. 20, 1918, p. 1698. Discusses the properties, advantages, and disadvantages of fatty oils and mineral oils for the lubrication of aviation motors.

**1648.** Bromley, C. H. Some notes on turbine bearings and their lubrication. Power, vol. 47, May 21, 1918, pp. 734–736. Jour. Am. Soc. Naval Eng., vol. 30, Aug., 1918, pp. 616–619. Discusses temperature, viscosity, and specific heat of oils used for this purpose, oil consumption, and costs.

**1649.** Bruenauer, Otto. Lubrication of ball bearings. Am. Mach., vol. 48, Feb. 21, 1918, pp. 316–322. Characteristics of oils and greases affecting lubrication under various conditions, with suggestions.

**1650.** Callan, W. H. Lubrication of air compressors. Coal Age, vol. 14, Aug. 1, 1918, pp. 211–213. Power, vol. 48, Aug. 13, 1918, pp. 229–230. Am. Mach., vol. 49, Sept. 26, 1918, pp. 575–577; Compressed Air Mag., vol. 23, Sept., 1918, pp. 8881–8884. Gives experience with different kinds of oil, concluding that the most suitable is a pure mineral oil having a gravity from 31 to 33 degrees Baumé, flash point 375–390 degrees F., and viscosity 140–150 S., at 100° F.

**1651.** Clark, W. G. Lubrication of tractor engines. Jour. Soc. Auto. Eng., vol. 2, May, 1918, pp. 346–349; discussion, pp. 349–352. Discusses the relation of lubrication to carburetion and ignition and the importance of the selection of a proper lubricant, describing tests made on lubricating oils by a new method.

**1652.** De Cew, J. A. Emulsion lubrication of cutting tools. Am. Mach., vol. 49, Sept. 5, 1918, pp. 433–434.

**1653.** Lentz, S. F. Conservation of motor fuel as affected by lubricating oil. Gas Engine, vol. 20, July, 1918, pp. 327–332; discussion, pp. 332–333. Discusses conditions necessary for efficient lubrication and the important properties of a lubricating oil.

**1654.** Lubrication. Effect of circulating water temperatures on the lubricating oil used in internal combustion engines. Vol. 5, June, 1918, pp. 11–14. Describes tests.

1655. LUBRICATION. Lubrication of refrigeration machinery. Vol. 5, March, 1918, pp. 3–11. Includes discussion of properties necessary in oils used for this purpose.

1656. ——— Some difficult gear lubricating conditions in the cement plant. Vol. 5, August, 1918, pp. 3–8. Gives characteristics which a satisfactory gear lubricant must possess.

1657. ——— Tractor lubrication. Vol. 5, April, 1918, pp. 3–11. Includes discussion of requirements in an oil to meet conditions of tractor motor operation.

1658. MERRILL, KEITH. The reclamation of grease and oil. Petroleum, vol. 4, March, 1918, p. 83. Tells how lubricating oil is reclaimed from engines, gear boxes, etc., when stripped for overhaul, and how cleaning rags from garages are renovated and the oil and grease removed are used again.

1659. OSBORNE, W. F. Lubrication of internal combustion engine cylinders. Bull. Nat. Gas Eng. Assoc., January, 1918. Lubrication, vol. 5, February, 1918, pp. 2–9. Mech. World, vol. 63, June 28, 1918, pp. 309–310. Abstracts in Power, vol. 47, Mar. 5, 1918, pp. 342–343; and in Gas Engine, vol. 20, April, 1918, pp. 177–180. Includes discussion of the effect of different fuels and of efficient carburetion on lubrication, and of the characteristics of suitable lubricants.

1660. ——— Steam cylinder lubrication. Lubrication, vol. 5, May, 1918, pp. 2–12. Points out how steam cylinder oils may be conserved by the application of scientific principles to the selection and use of the oil most suitable in each case.

1661. PETROLEUM. What is lubrication? Vol. 6, December, 1918, pp. 79–80, 82, 84. Discusses principles and work of lubricants in atuomobile engines.

1662. RATHBUN, J. B. Aeroplane engine lubricating oils. Petroleum, vol. 6, November, 1918, pp. 137, 139, 141, 143. Discusses aeroplane engine lubrication problems.

1663. ROWLAND, G. R. Electric crane lubrication. Lubrication, vol. 5, October, 1918, pp. 2–10. Describes types of bearings on electric cranes and discusses methods of lubrication and suitable oils.

1664. SOCIETY OF AUTOMOTIVE ENGINEERS' JOURNAL. Acidity in ball and roller-bearing grease. Vol. 3, December, 1918, p. 388. Opinions of bearing and lubricant manufacturers as to the relative merits of vegetable and animal oils in greases, and as to the effect of the viscosity of the mineral oil used on its lubricating qualities.

1665. WATERMAN. H. I. [The formation of a precipitate in lubricating oils during use.] Chem. Weekblad, vol. 15, 1918, pp. 1610–1611. Chem. Abs., vol. 13, Apr. 10, 1919, p. 787.

*See also* Nos. 84, 801, 820, 821, 833, 897, 918, 1227, 1248, 1273.

## MEDICINAL AND PHARMACEUTICAL (750).

### PATENTS.

1666. LINN, S. S. Medical preparation. United States patent 1,284,117, Nov. 5, 1918. Lotion.

*See also* Nos. 1205, 1227.

## CONSUMPTION, FINANCES, RECORDS AND STATISTICS, COSTS (770).

1667. BLANKENHORN, G. S. Oil burning plants. Method of estimating amount of fuel required. Power Plant Eng., vol. 22, Jan. 15, 1918, pp. 85–86. Gives method used in a Pacific coast installation.

1668. GILLETTE, H. P., AND DANA, R. T. Handbook of mechanical and electrical cost data. New York, McGraw-Hill Book Co. (Inc.), 1918. 1734 pp. Includes chapters on internal combustion engine costs, on fuel and coal handling, including comparative costs of coal and oil fuel in various mechanical operations, and on steam power, including comparative efficiencies and costs of steam, water, gas, and oil power generation.

**1669.** Morrison, L. H. Fuel consumption of low-compression oil engines. Power, vol. 47, Mar. 12, 1918, p. 367. Gives amount of fuel consumed per brake horsepower per hour at various loads, and discusses the properties of the fuels best suited for these engines.

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NOTE.—In this index the word "oil" used by itself signifies petroleum, but the word "gas" similarly used does not signify natural gas; "oil fields," "gas fields," "oil wells" "gas wells" refer to petroleum and natural gas.

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